Kawasaki

# KX250F
# KX450F

# KX FI Calibration Kit
# (KX Racing Software)
# Instruction Manual

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Version 1 2011.7

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# 1 Preface

Thank you for purchasing Kawasaki's "KX FI Calibration Kit". This Instruction Manual outlines the "KX FI Calibration Kit" and explains how to operate it. Read this manual first and gain a thorough understanding of the contents so that you can fully utilize the performance and functions of the "KX FI Calibration Kit".

Also, keep this manual on hand so that you can read it when necessary.

## 1-1 Warranty terms

The KX Series motorcycles have been developed for motocross racing only. If you ride a motorcycle in a race, any damage to the motorcycle will not be covered by the Warranty because racing conditions are more severe than those encountered during ordinary usage of a motorcycle. Please be forewarned.

Also, any abnormalities that arise due to the use of the "KX FI Calibration Kit" are not warranted.

- If the "KX FI Calibration Kit" is used and if the motorcycle data is lost due to hardware failure, a malfunction or any other reason, it will not be covered by the Warranty. We recommend that you back up all the data that is important to you.
- There is no guarantee that the "KX FI Calibration Kit" will meet a specific purpose of a customer.

In addition, please read and gain a thorough understanding of the Software license agreement shown on page 8.

# 1-2 Copyright notice

- For motorcycle service information not covered by this Manual, refer to the KX250F Service Manual (99924-1437-01 to 02) or the KX450F Service Manual (99924-1410-01 to 03, 99924-1448-01).
- This Manual is intended to be used by service personnel who have basic knowledge of Windows system operations. For general terms and operations of the Windows system, please read the commercial guidebooks.
- The contents of this manual may not be copied in part or in full without our permission.
- The machine names and software versions described in this manual were checked when this manual was released.
- The specifications, design and contents of this manual are subject to change without notice.
- This contents of this manual may be modified for improvement in future without notice.
- This manual uses the following warning and caution symbols to assure the safety of your inspection and maintenance services.

**⚠ WARNING**

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

***NOTICE***

NOTICE is used to address practices not related to personal injury.

**NOTE**

❍ *This symbol indicates points of particular interest for more efficient and convenient operation.*

**(Reference)** This information is helpful.

**[See]** Shows the reference page.

- The Windows XP (Home Edition/ Professional Edition), Windows Vista (Home Basic/Home Premium/Business/Ultimate) and Windows 7 (Home Basic/Home Premium/Professional/Ultimate) are registered trademarks of Microsoft Corporation.

# 1-3 Safety precautions

- Exhaust gas is toxic. Do not operate engine for a long period of time in a closed or poorly ventilated location.
- The exhaust pipes and engine will still be very hot when you stop the engine. Take care not to touch the hot parts.
- Gasoline is flammable and can ignite. When you refuel or remove the gasoline during servicing, stop the engine. Do not smoke nearby.
  If you overfill the tank, gasoline can expand and leak from the breather hose of the tank cap while riding.
  Close the tank cap securely.
  Remove any fuel residue that might have leaked.
- During servicing, exercise extreme care so that your hands, cloths, tools or other objects do not come in contact with the wheels, drive chain, sprocket, or other moving parts.

# 1-4 Software (KX Racing Software) license agreement

This User License Agreement (“AGREEMENT”) is a legal agreement between you (either an individual or a single entity) and Kawasaki Heavy Industries, Ltd., a Japanese company, (“Kawasaki”) for the KX Racing Software (“SOFTWARE”). By installing, copying, or otherwise using the SOFTWARE, you shall agree to be bound by the terms of this AGREEMENT. If you will not agree to the terms of this AGREEMENT, promptly uninstall the SOFTWARE and destroy all the SOFTWARE, including its COPY if you have made one.

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You shall agree not to export the SOFTWARE to foreign countries except for complying with local laws and rules.

**8. COMMERCIAL ARBITRATION**

In case of trouble with the AGREEMENT, both parties assign Japan Commercial Arbitration Association and under the rule thereof to settle a dispute and the award thereof shall be final and binding upon both parties.

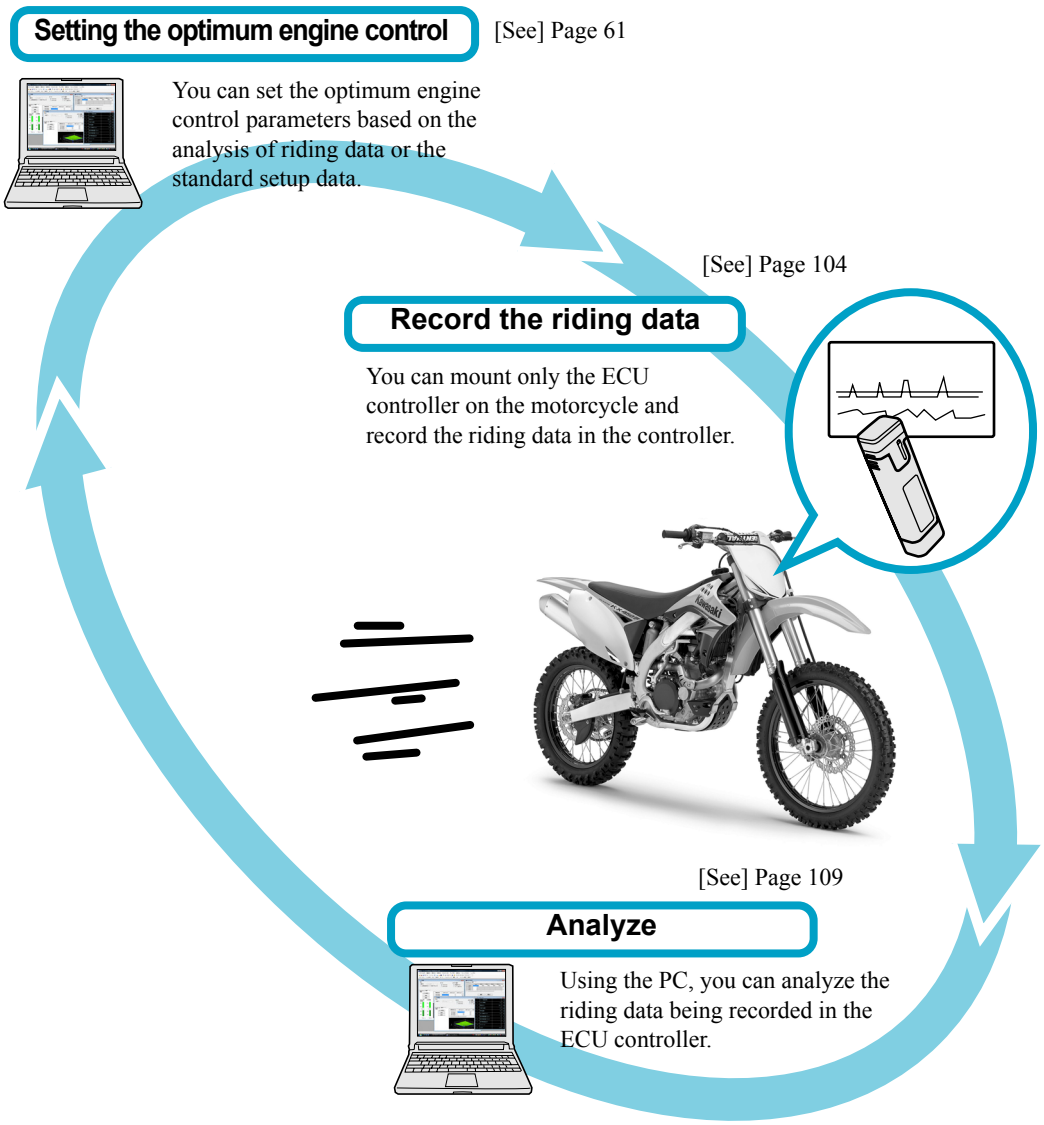
# 2 Outline of the Calibration Kit

The KX FI Calibration Kit allows you to adjust the fuel injection and ignition timing values. In addition, the DFI operational values (data) can be logged and recorded in the ECU controller. You can analyze the data later on the PC using the KX software.

By changing the data settings then recording and analyzing the new data, you can set the optimum engine parameters according to the course, rider's technique and skills, weather conditions, or other factors.

## 2-1 Functionality

Using the KX FI Calibration Kit, you can do the following:


Setting the optimum engine control
[See] Page 61
You can set the optimum engine control parameters based on the analysis of riding data or the standard setup data.
[See] Page 104
Record the riding data
You can mount only the ECU controller on the motorcycle and record the riding data in the controller.
[See] Page 109
Analyze
Using the PC, you can analyze the riding data being recorded in the ECU controller.

## Setting the optimum engine control

Using the preset Setting data, you can change the current engine settings quickly and accurately.

Also, you can customize the engine performance by changing the current rate of fuel injection and engine ignition timing and applying them to the ECU. You can call out the desired parameter settings from the ECU controller and set them to meet the various riding conditions.

Your settings can be saved in a file.

You can edit the following settings and apply them to the ECU for engine control.

**[See]** “5 Setting the Optimum Engine Control” (Page 61)

## Recording and analyzing the riding data

Engine data can be recorded based on user selected items, in a variety of conditions and time periods.

After transferring the Logging data from the ECU controller to the PC it can be displayed as graphical data for analysis, and comparison with other riding data.

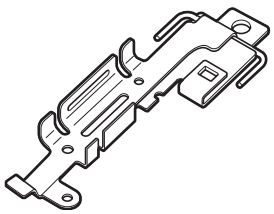
**[See]** “7 Logging Riding Data” (Page 104) and “8 Analyzing the Riding Data” (Page 109)

# 3 Before Using the Calibration Kit

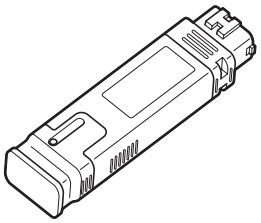
Before using the KX FI Calibration Kit, prepare the following:

## 3-1 Preparation

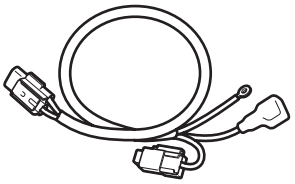
### Parts included in the Package of the Basic Kit(99999-0334)



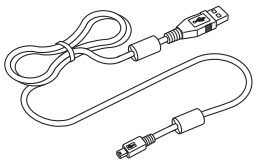
(1) Controller bracket (11056-0592)



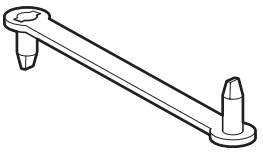
(2) ECU controller



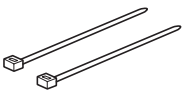
(3) Power supply harness (26011-0246)



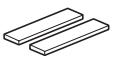
(4) USB cable



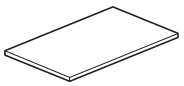
(5) Wire harness clamp (92037-1163)



(6) Controller band × 2 sets (92072-3874)



(7) Lower/upper controller damper × 2 sets (92161-0761)



(8) Controller damper (92161-0768)

(9) Software CD-ROM disk (41080-0583)

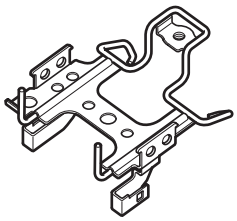
- KX Racing Software
- Instruction Manual (in Japanese)
- Instruction Manual (in English)
- Quick Reference Sheet (in Japanese/English)
- Sample Setting Data

(10) Quick Reference Sheet

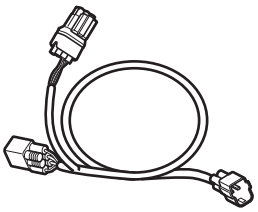
## Other Items Required

### Optional parts

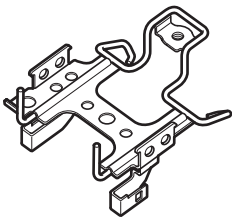
Prepare the optional parts for the model.



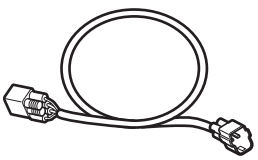
(11) ECU bracket
(For KX250F 2011 and KX450F 2011 models)
(11056-0597)



(12) Controller sub-harness
(For KX250F 2011 and 2012 models and KX450F 2011 model)
(26011-0315)



(13) ECU bracket
(For KX250F 2012 model)
(11056-1657)



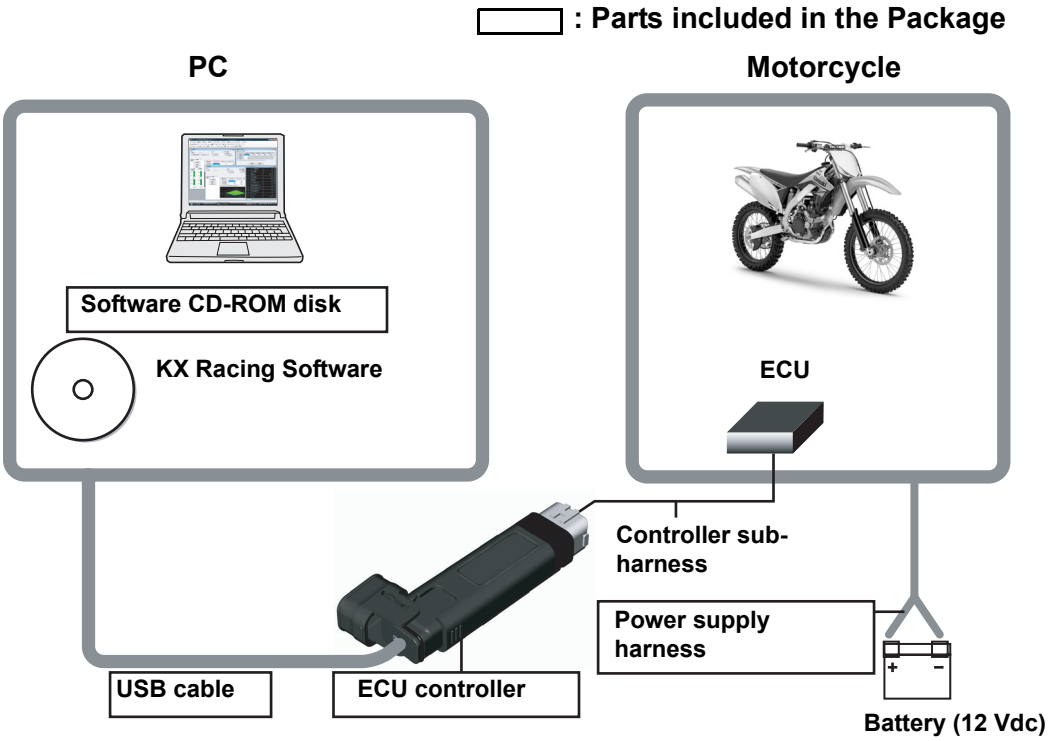
(14) Controller sub-harness
(For KX450F 2009 to 2010 and 2012 models)
(26011-0243)

(15) PC (running on the Windows XP/Vista/7 OS; for details, see Page 15)

(16) Battery (12 Vdc)

# 3-2 System configuration

The following parts are contained in the KX FI Calibration Kit. Prepare the motorcycle, Optional parts a Windows PC, and a 12 Vdc battery separately.



# 3-3 Specifications

The following are the recommended PC and battery specifications.

## PC

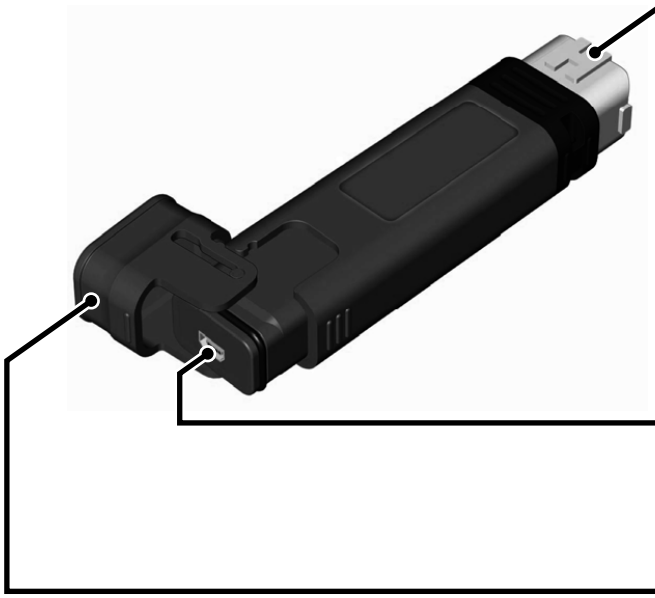
| Item | Requirements |
|---|---|
| **OS** | Windows XP (Home Edition/ Professional Edition) 32 bit (Service Pack 3 or later)<br>Windows Vista (Home Basic/Home Premium/Business/Ultimate) 32 bit (Service Pack 2 or later)<br>Windows 7 (Home Basic/Home Premium/Professional/Ultimate) 32/64 bit<br>* The Windows XP, Windows Vista (64-bit), and Windows 7 Starter are not supported. |
| **Supported OS languages** | Japanese, English, German, French, Spanish, and Italian<br>* If a Japanese OS is running on the PC, this software (KX Racing Software) will be displayed in Japanese. If a non-Japanese OS is running on the PC, this software will be displayed in English. |
| **CPU** | The Intel's PentiumM CPU or a higher model that can satisfy the recommended OS requirements. |
| **System memory** | Recommended OS memory capacity plus 512 MB or more |
| **Hard disk drive** | Recommended OS memory capacity plus 5 GB or more |
| **Display** | 1024 × 768-pixel or higher resolution |
| **Others** | CD-ROM drive (required for program installation)<br>USB connector port (supporting USB 2.0 or later) |

## Battery

Prepare a fully charged 12 Vdc battery, as KX models are not equipped with one.

# 3-4 ECU controller

The following explains each part of the ECU controller.



**Connector to motorcycle**
Plug the controller sub-harness into this connector port.

**USB connector**
Port for USB cable mini-B connector.

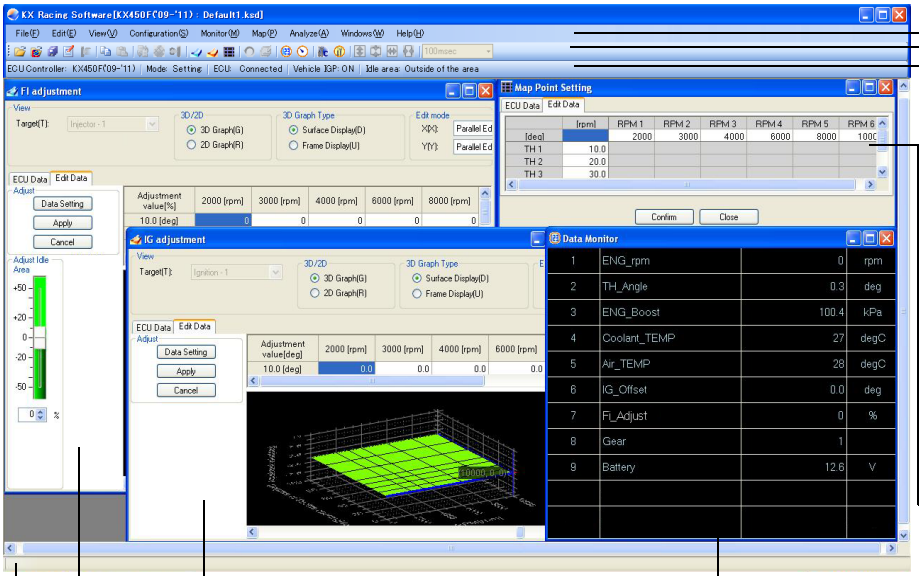
**USB connector cover**
This is a USB connector cover.

* Close this cover by sliding it to its end while riding and when the USB connector is not being used.

# 3-5 Names and functions of the “KX Racing Software” windows

The following explains the names and functions of “KX Racing Software” windows.

## Basic window




**Menu bar**
Used to call the primary functions and settings.

**[See]** Page 18

**Toolbar**
Frequently used functions are shown as icons on the Toolbar.

**[See]** Page 28

**Status bar**
Used to display the current status of the ECU controller, ECU and other components.

**[See]** Page 31

**[Map Point Setting] window**
Adjustment of the FI and IG maps. Used to change the map points.

**[See]** Page 91

**[IG Adjustment] window**
Used to adjust the engine ignition (IG) timing.

**[See]** Page 76

**[Data Monitor] window**
Real-time data is read from the motorcycle’s ECU and displayed in the “Data Monitoring” window.

**[See]** Page 94

**[FI Adjustment] window**
Used to adjust the fuel injection (FI) amount.

**[See]** Page 65

**Message status bar**
Displays a system message.

**[See]** Page 33

# Menu bar

Used to open the primary functions of the KX Racing Software.

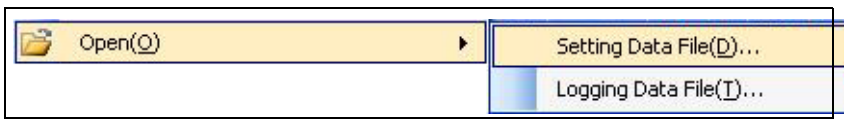
**(Reference)** You can open frequently used functions by directly selecting their icons shown on the Toolbar.
**[See]** " Toolbar" (Page 28)

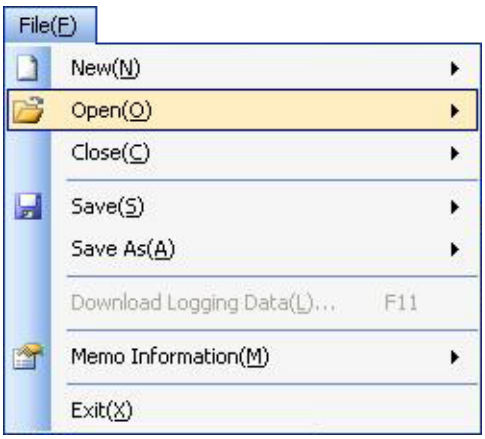
## ■File

Used to open the Setting and Logging data files.

**NOTE**

❍ *From the menu, select the Setting or Logging data file that you want to open.*




| Icon | Name | Function | Reference page |
|---|---|---|---|
| | **New** | Creates a new file.<br>• Operable data: The Setting data file | 63 |
| | **Open** | Opens an existing file.<br>• Operable data: The Setting data file, and the Logging data file | 61 |
| - | **Close** | Closes the currently open file.<br>• Operable data: The Setting data file, and the Logging data file | - |

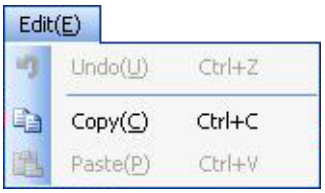
| Icon | Name | Function | Reference page |
|---|---|---|---|
| | **Save** | Saves data in the opened file by overwriting the data. If the file has not yet been created, a new file is created and the data is saved.<br>• Operable data: The Setting data file, and the Logging data file | 86 |
| - | **Save As** | Renames the file and saves it.<br>• Operable data: The Setting data file, the Logging data file, and ECU data | 86 |
| - | **Download Logging Data** | Loads the Logging data (if any) from the ECU controller to the PC.<br>When the data is loaded, a Logging data file is created. | 104 |
| | **Memo Information** | Displays and edits the memo of the currently read file.<br>• Operable data: The Setting data file, and the Logging data file | 118 |
| - | **Exit** | Exits the “KX Racing Software”. | - |

## ■Edit

Edits data.

**NOTE**

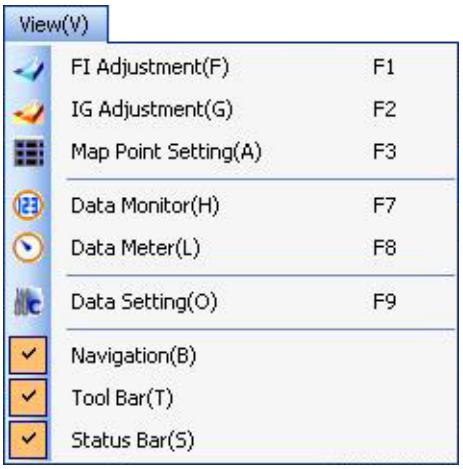
❍ *You can use this menu only when the [FI Adjustment] window or [IG Adjustment] window is active.*




| Icon | Name | Function | Reference page |
|---|---|---|---|
| | **Undo** | Returns the editing data to the previous status. | - |
| | **Copy** | Copies a selected range of data into internal memory. | - |
| | **Paste** | Pastes the internal memory data to the specified position. | - |

## ■View

Displays or hides various windows and bars.

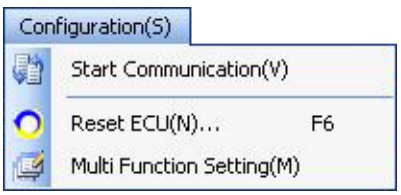



| Icon | Name | Function | Reference page |
|---|---|---|---|
| (Blue) | **FI Adjustment** | Opens the [FI Adjustment] window.<br>**NOTE**<br>❍ *This window is opened only when the Setting data file has been read.* | 65 |
| (Orange) | **IG Adjustment** | Opens the [IG Adjustment] window.<br>**NOTE**<br>❍ *This window is opened only when the Setting data file has been read.* | 76 |
| | **Map Point Setting** | Opens the [Map Point Setting] window.<br>**NOTE**<br>❍ *This window is opened only when the Setting data file has been read.* | 91 |
| | **Data Monitor** | Opens the [Data Monitor] window. | 94 |
| | **Data Meter** | Opens the [Data Meter] window. | 95 |
| | **Data Setting** | Opens the [Data Setting] window. | 105 |

| Icon | Name | Function | Reference page |
|---|---|---|---|
| - | **Navigation** | Displays or hides the Navigation bar.<br>The Status bar is displayed when its box is checked ( ☑ ). | - |
| - | **Toolbar** | Displays or hides the Toolbar.<br>The Status bar is displayed when its box is checked ( ☑ ). | - |
| - | **Status bar** | Displays or hides the Status bar.<br>The Status bar is displayed when its box is checked ( ☑ ). | - |

## ■Configuration

Connects to the vehicle to transfer fuel injection and ignition timing data values.

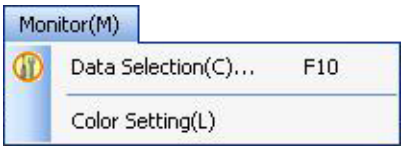



| Icon | Name | Function | Reference page |
|---|---|---|---|
| | **Start Communication** | Vehicle recognition process.<br>**NOTE**<br>❍ *This function is disabled if the PC is disconnected from the ECU controller or if the vehicle IGP is turned Off.* | 59 |
| | **Reset ECU** | Resets default values.<br>**NOTE**<br>❍ *This function is disabled if the communication with the ECU has not been established.* | 93 |

| Icon | Name | Function | Reference page |
|---|---|---|---|
| | **Multi Function Setting** | Sends both fuel injection and ignition timing values to the ECU controller simultaneously.<br>**NOTE**<br>❍ *You cannot use this icon if:*<br>• The [FI Adjustment] window or [IG Adjustment] window is not opened.<br>• The ECU is disconnected.<br>• The Setting mode is not selected.<br>• The map point information differs from that of the ECU. | 93 |

## ■Monitor

You can set the monitor functions as follows.



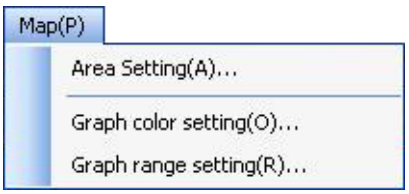

| Icon | Name | Function | Reference page |
|---|---|---|---|
| | **Data Selection** | Opens the [Data Selection] window.<br>You can set up the monitor and data entries. | 97 |
| - | **Color Setting** | Opens the [Set Monitor Screen Color] window.<br>You can change the display color of [Data Meter] and [Data Monitor] windows. | 103 |

## ■Map

Processes the new fuel injection and ignition timing maps.

**NOTE**

❍ *You can use this menu when the [FI Adjustment] window is opened.*



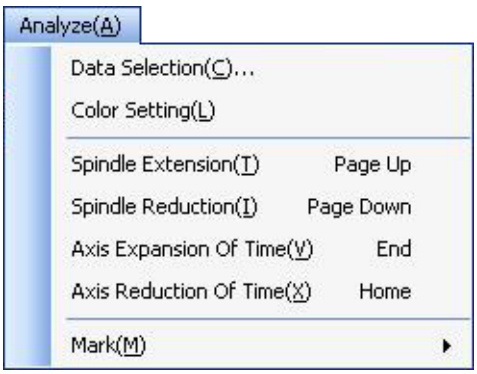

| Icon | Name | Function | Reference page |
|---|---|---|---|
| - | **Set areas** | Opens the [Area Setup] window. | 87 |
| - | **Set graph colors** | Opens the [Graph Colors] window. | 89 |
| - | **Graph range setting** | Opens the [Graph Range Setting] window. | 90 |

## ■Analyze

Operates the Logging data display.

**NOTE**

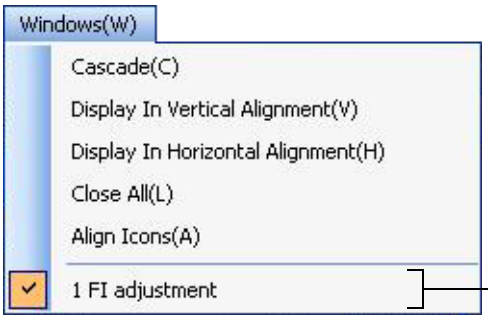
❍ *You can use this menu when the [Analyze] window is opened.*




| Icon | Name | Function | Reference page |
|---|---|---|---|
| - | **Data Selection** | Opens the [Setup of Display Data Info] window.<br>You can set the items to be shown in the [Analyze] window. | 116 |
| - | **Color Setting** | Opens the [Analysis Graph Colors] window.<br>You can set the display color of the [Analyze] window. | 117 |
| - | **Spindle Extension** | Scales up the vertical axis of a graph in the [Analyze] window. | 115 |
| - | **Spindle Reduction** | Scales down the vertical axis of a graph in the [Analyze] window. | 115 |
| - | **Axis Expansion Of Time** | Scales up the horizontal time axis of a graph in the [Analyze] window. | 115 |
| - | **Axis Reduction Of Time** | Scales down the horizontal time axis of a graph in the [Analyze] window. | 115 |
| - | **Mark** | Adds or deletes marks to/from the [Analyze] window.<br>You can select the [Add] or [Delete] option from the menu. | 114 |

## ■Windows

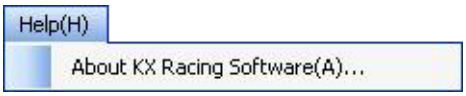
Aligns the opened windows and icons.




| Icon | Name | Function | Reference page |
|---|---|---|---|
| - | **Cascade** | Overlays windows on the basic screen. | - |
| - | **Display In Vertical Alignment** | Aligns the windows in vertical direction on the basic screen. | - |
| - | **Display In Horizontal Alignment** | Aligns the windows in horizontal direction on the basic screen. | - |
| - | **Close All** | Closes all windows simultaneously on the basic screen. | - |
| - | **Align Icons** | Displays all windows in compact size on the basic screen. | - |
| - | **Window display/switch menu** | Lists the name of currently opened windows. When you select a window name, its window is opened.<br>The window is displayed in the front when its box is checked ( ). | - |

## ■Help

Displays version information.

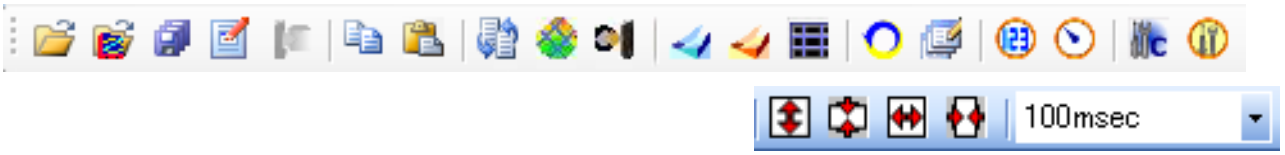



| Icon | Name | Function | Reference page |
|---|---|---|---|
| - | **About KX Racing Software** | Displays the current software version of the KX Racing Software.<br> <br>Click the [OK] button to close the help. | - |

Version information on KX Racing Software
KX Racing Software
Application Version: Ver 1.1.2
Application Build Date: Monday, November 15, 2010
ECU Controller Version: Not Connected
Copyright(C) 2008-2010 KEIHIN CORPORATION
All rights reserved.
This product is protected by laws and international treaties regarding the copyright.Duplication of a part or whole of the product or distribution of the duplicate without permission violate copyright law.
OK

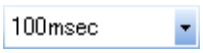
## Toolbar

Frequently used functions are shown as icons on the Toolbar.




| Icon | Name | Function | Reference page |
|---|---|---|---|
| | **Open the Setting data file** | Opens the Setting data file. | 61 |
| | **Open Logging data file** | Opens the Logging data file. | 61 |
| | **Save** | Saves your settings in the currently opened file by overwriting. If the file has not yet been created, a new file is created and the data is saved in it. | 86 |
| | **Memo Information** | Displays and edits the memo of the current Setting data file. | 118 |
| | **Download Logging data** | Downloads the Logging data (if any) from the ECU controller to the PC.<br>When the data is downloaded, a Logging data file is created. | 104 |
| | **Copy** | Copies a selected range of data into internal memory. | - |
| | **Paste** | Pastes the internal memory data to the specified position. | - |
| | **Start Communication** | ECU communication process.<br>**NOTE**<br>❍ *This function is disabled if the PC is disconnected from the ECU controller.* | 59 |
| | **Setting Mode** | Switch the ECU controller operational mode to the setting mode. | 105 |

| Icon | Name | Function | Reference page |
|---|---|---|---|
| | **Logging Mode** | Switch the ECU controller operational mode to the logging mode. | 105 |
| **(Blue)** | **FI Adjustment** | Opens the [FI Adjustment] window.<br>**NOTE**<br>❍ *You cannot open this window if the Setting data file is not open.* | 65 |
| (Orange) | **IG Adjustment** | Opens the [IG Adjustment] window.<br>**NOTE**<br>❍ *You cannot open this window if the Settings data file is not open.* | 76 |
| | **Map Point Setting** | Opens the [Map Point Setting] window.<br>**NOTE**<br>❍ *You cannot open this window if the Settings data file is not open.* | 91 |
| | **Reset ECU** | Resets default values.<br>**NOTE**<br>❍ *This function is disabled if the communication with the ECU has not been established.* | 93 |
| | **Multi Function Setting** | Sends the both fuel injection and ignition timing values to the ECU controller simultaneously.<br>**NOTE**<br>❍ *You cannot use this icon if:*<br>• The [FI Adjustment] window or [IG Adjustment] window is not opened.<br>• The ECU is disconnected.<br>• The Setting mode is not selected.<br>• The map point information differs from that of the ECU. | 93 |
| | **Data Monitor** | Opens the [Data Monitor] window. | 94 |
| | **Data Meter** | Opens the [Data Meter] window. | 95 |

| Icon | Name | Function | Reference page |
|---|---|---|---|
| | **Data Setting** | Opens the [Data Setting] window. | 105 |
| | **Data Selection** | Opens the [Data Selection] window.<br>You can set up the monitor and data entries. | 97 |
| | **Spindle Extension** | Scales up the vertical axis of a graph in the [Analyze] window. | 115 |
| | **Spindle Reduction** | Scales down the vertical axis of a graph in the [Analyze] window. | 115 |
| | **Axis Expansion Of Time** | Scales up the horizontal time axis of a graph in the [Analyze] window. | 115 |
| | **Axis Reduction Of Time** | Scales down the horizontal time axis of a graph in the [Analyze] window. | 115 |
|  <br>**Scale of time axis** | | Displays the time scale of the current graph in the [Analyze] window. You can select from two scales. | 115 |

## Status bar

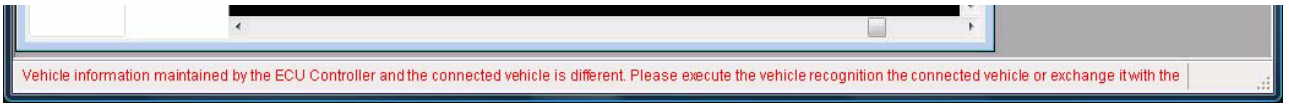
Used to display the current ECU controller status.

| Name | Function | Reference page |
|---|---|---|
| **ECU Controller** | Displays the recognized vehicle information and the ECU controller status information. If the vehicle information is displayed, it indicates that the recognition process is completed and connection is established.<br>• Not connected: The PC is not connected to the ECU controller.<br>• Vehicle information none: The ECU controller is not recognized.<br>• Logging: The ECU controller is recording data.<br>• Wait for a trigger: The ECU controller is waiting for a trigger to start.<br>• Wait for a trigger (with Logging data): The ECU controller is waiting for a trigger to start. The controller already has data if Additional Recording mode is selected.<br>• Holding normal log data: The ECU controller holds normal riding data.<br>• Holding abnormal log data: The ECU controller holds abnormal riding data.<br>• Abnormal recording condition: The ECU controller has an abnormal riding data recording condition. | - |
| **ECU** | Indicates the communication status between the PC and ECU.<br>• Connected: The communication with the ECU has been established.<br>• Not connected: The communication with the ECU has not been established. Check the USB cable connections. | - |

| Name | Function | Reference page |
|---|---|---|
| **Mode** | Displays ECU controller operational mode.<br>• Setting: Allows alteration of the fuel injection and ignition timing maps.<br>• Logging: Records the data obtained during communication with the ECU.<br>Click [Mode] to open the menu and to switch the mode.<br> | 105 |
| **Vehicle IGP** | Displays the status of electrical (battery or generator) power to the ECU controller.<br>• ON: Power is being supplied.<br>• OFF: No electrical power supply. | - |
| **Idle area** | Indicates if the engine is idling or not. The engine idling is determined by the ECU. | - |

## Message status bar

Displays a system message.


Vehicle information maintained by the ECU Controller and the connected vehicle is different. Please execute the vehicle recognition the connected vehicle or exchange it with the

- **The ECU controller has not recognized the vehicle. Carry out the vehicle recognition process for the vehicle.**
  This message is displayed if the ECU controller is not yet recognized for the vehicle.
  Complete the vehicle recognition process.

  **[See]** “4-6 Vehicle recognition” (Page 59)

- **The ECU controller and the setting data file contain different types of vehicle information.**
  This message is displayed if the vehicle information contained in the currently opened setting data file differs from the vehicle information held by the ECU controller. You cannot display or send the vehicle data.
  Use the setting data file that contains the same vehicle information (shown on [ECU Controller] of the Status bar) as that held by the connected ECU controller.
  If you wish to use the currently opened setting data file, either carry out the vehicle recognition process (“4-6 Vehicle recognition” (Page 59)) or replace the ECU controller with the one that has the same vehicle information as that of the setting data file.

- **The ECU controller and the connected vehicle contain different types of vehicle information. Either carry out the vehicle recognition process or replace the ECU controller with the one that has already been recognized for the connected vehicle.**
  This message is displayed if the vehicle information (shown on [ECU Controller] of the Status bar) held by the ECU controller does not match that of the currently connected vehicle.
  Either carry out the vehicle recognition process (“4-6 Vehicle recognition” (Page 59)) or replace the ECU controller with the one that has already been recognized for the connected vehicle.

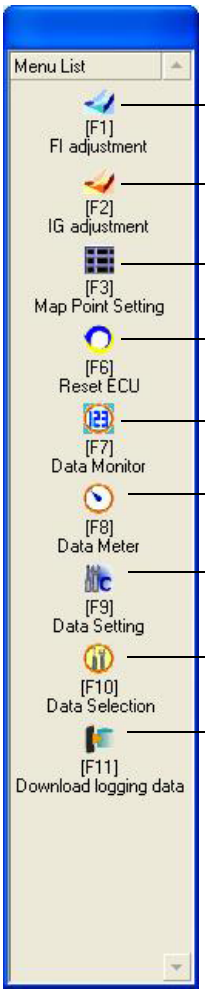
- **The ECU controller and the setting data file contain different types of data information. Open the data setup window, set the data, and save the settings.**
  This message is displayed if the data information held by the ECU controller does not match the data information stored in the currently opened setting data file.
  Set the data and save your settings.

  **[See]** “7-3 Saving the data and sending it to the ECU controller” (Page 107)

## Navigation bar

The Navigation Bar lists the primary functions of "KX Racing Software" that have been assigned to the PC's function keys.

You can quickly activate a function by pressing its function key on the PC's keyboard. Also, you can select each function by clicking its icon on the Navigation Bar.




**F1 key:** Opens the [FI Adjustment] window. (**[See]** Page 65)
- *This window is opened only when the Setting data file has been read.*

**F2 key:** Opens the [IG Adjustment] window. (**[See]** Page 76)
- *This window is opened only when the Setting data file has been read.*

**F3 key:** Opens the [Map Point Setting] window. (**[See]** Page 91)
- *This window is opened only when the Setting data file has been read.*

**F6 key:** Resets ECU default values. (**[See]** Page 93)
- *This function is disabled if the communication with the ECU has not been established.*

**F7 key:** Opens the [Data Monitor] window. (**[See]** Page 94)

**F8 key:** Opens the [Data Meter] window. (**[See]** Page 95)

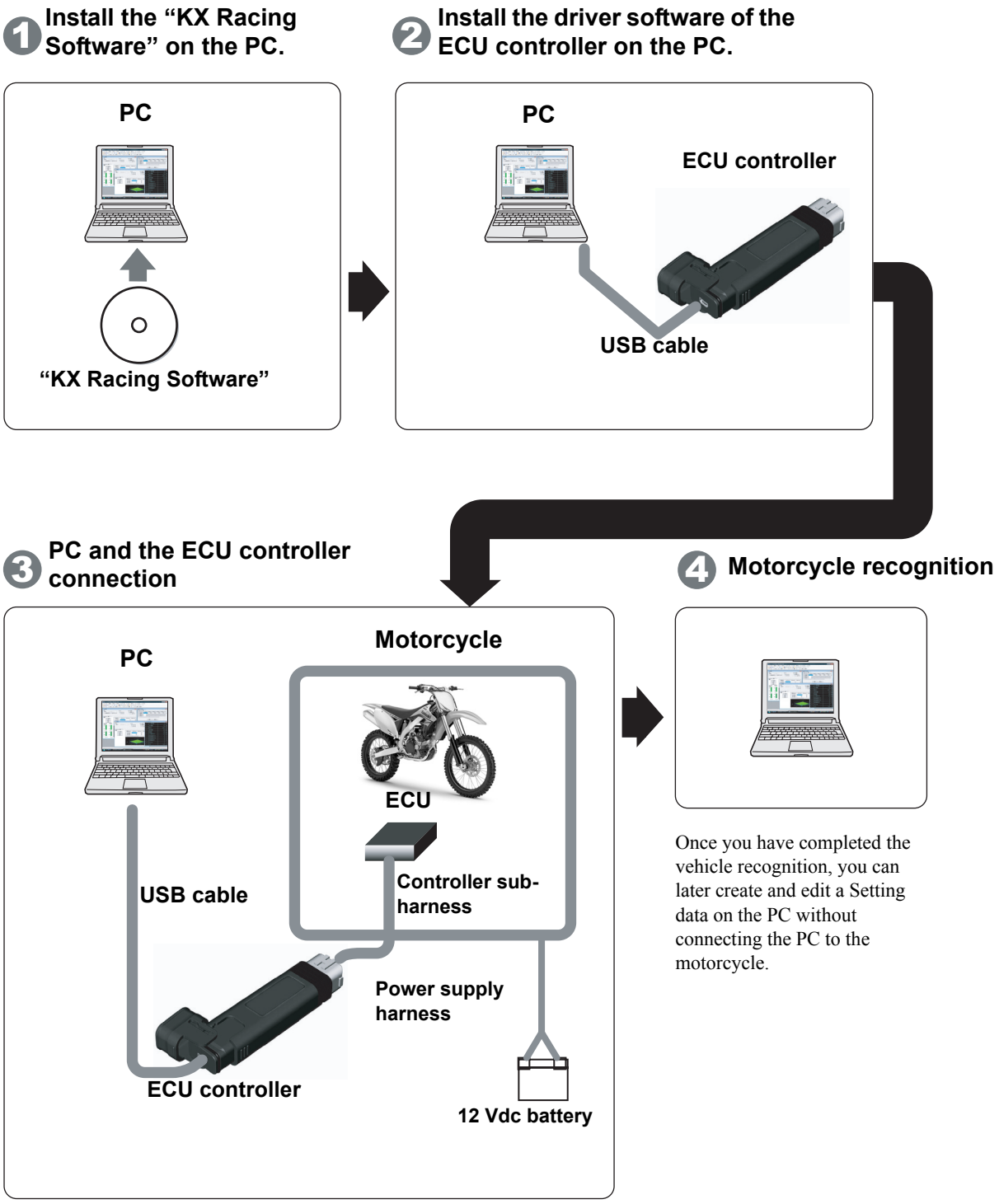
**F9 key:** Opens the [Data Setting] window. (**[See]** Page 105)

**F10 key:** Opens the [Data Selection] windows. (**[See]** Page 97)

**F11 key:** Loads the Logging data from the ECU controller to the PC. (**[See]** Page 104)

Before using the KX FI Calibration Kit, you need to install the software on the PC and mount the ECU controller on the motorcycle.

## 4-1 Preparation




Once you have completed the vehicle recognition, you can later create and edit a Setting data on the PC without connecting the PC to the motorcycle.

# 4-2 Installing the KX Racing Software

KX Racing Software allows the user to change the engine control values and then send it to the ECU controller. The software can also display and analyze the riding data logged by the ECU controller. Install the KX Racing Software on the PC as follows. In the following steps, the PC is installed with the Windows Vista OS.

**1** Quit all other applications.

**2** With the computer at the desktop, put the software CD-ROM in the drive.

**3** Double-click and open the installer stored on the CD-ROM disk.

Select an installer that is appropriate for the OS running on the PC.

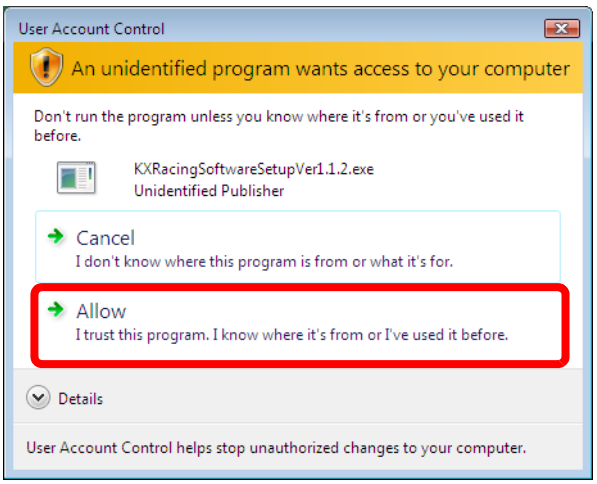
•Windows XP/Vista: KXRacingSoftwareSetupVer1.1.2.exe

•Windows 7 KXRacingSoftwareSetupVer1.1.2_for_Win7.exe

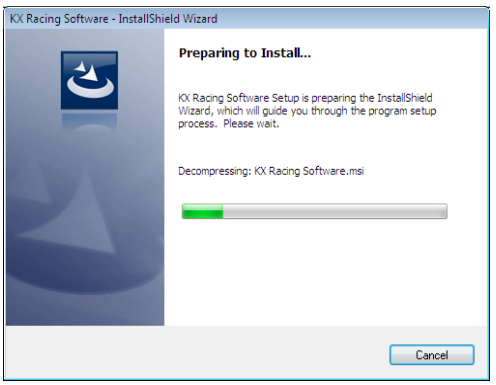
Select the desired language and click [OK].

**NOTE**

❍ *When the PC is running on the Windows Vista OS, the [User Account Control] window may open. If it does, select [Allow].*

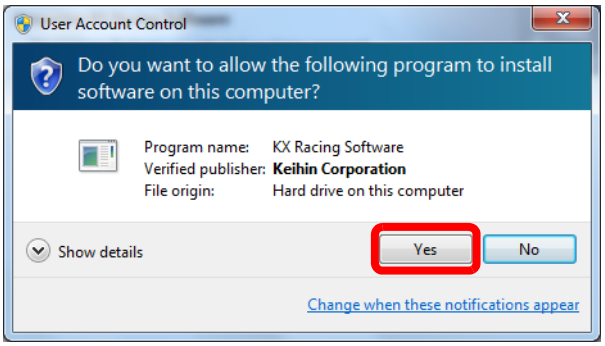

User Account Control
An unidentified program wants access to your computer
Don't run the program unless you know where it's from or you've used it before.
KXRacingSoftwareSetupVer1.1.2.exe
Unidentified Publisher
Cancel
I don't know where this program is from or what it's for.
Allow
I trust this program. I know where it's from or I've used it before.
Details
User Account Control helps stop unauthorized changes to your computer.

The “Preparing to install...” message is shown, and the PC environment is checked by the software.
After the check, the message “Welcome to the InstallShield Wizard for KX Racing Software” is shown.


KX Racing Software - InstallShield Wizard
Preparing to Install...
KX Racing Software Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.
Decompressing: KX Racing Software.msi
Cancel

**NOTE**

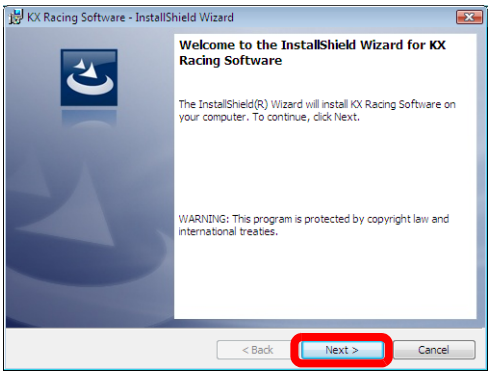
❍ *When the PC is running on the Windows 7 OS, the [User Account Control] window may open. If it does, click [Yes].*


User Account Control
Do you want to allow the following program to install software on this computer?
Program name: KX Racing Software
Verified publisher: Keihin Corporation
File origin: Hard drive on this computer
Show details
Yes
No
Change when these notifications appear

**(Reference)** The software checks for the correct OS and system requirements (**[See]** “3-3 Specifications” (Page 15)) and if the logon user (**[See]** “10 Terminologies” (Page 120)) has the administrator privilege.

## 4 Start to install the software.

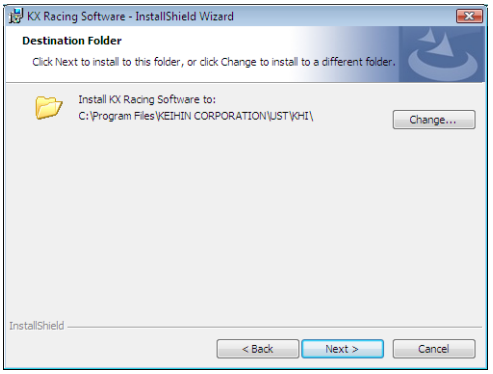
Click [Next].


KX Racing Software - InstallShield Wizard
Welcome to the InstallShield Wizard for KX Racing Software
The InstallShield(R) Wizard will install KX Racing Software on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

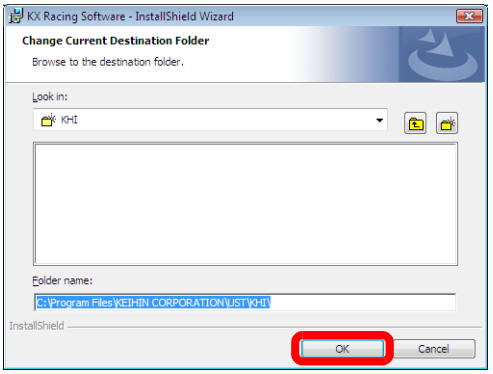
## 5 Select an installation folder.

If you agree to use the folder that is shown in “Install KX Racing Software to:”, click [Next].

“Ready to install the Program” message is shown.

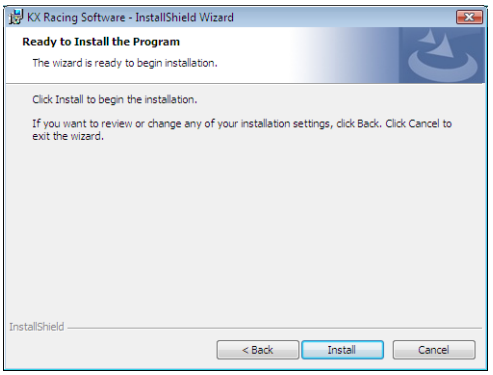

KX Racing Software - InstallShield Wizard
Destination Folder
Click Next to install to this folder, or click Change to install to a different folder.
Install KX Racing Software to:
C:\Program Files\KEIHIN CORPORATION\UST\KHI\
Change...
InstallShield
< Back
Next >
Cancel

If you wish to change the installation folder, click [Change...]. When the [Change Current Destination Folder] window opens, change the destination folder and click [Next].

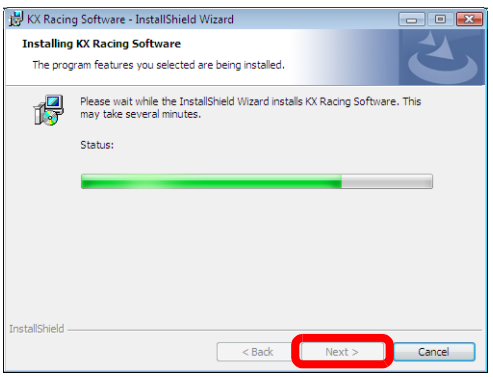



## 6 Complete the installation preparation..

Click [Install].

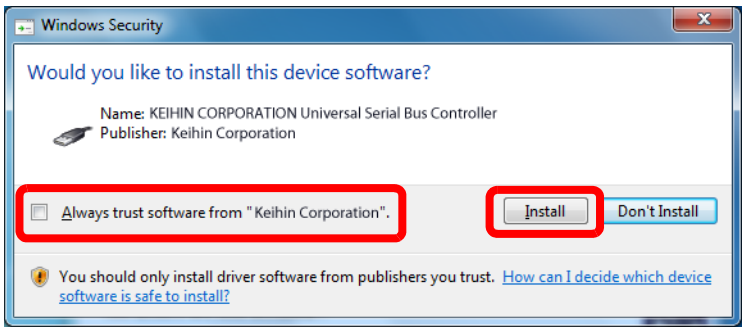

KX Racing Software - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

The “Installing KX Racing Software” message is shown

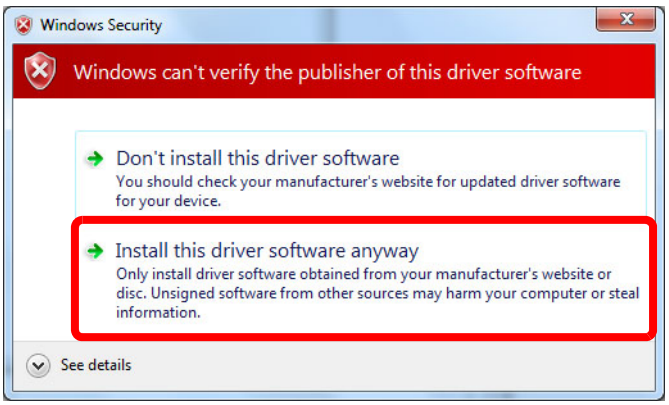

KX Racing Software - InstallShield Wizard
Installing KX Racing Software
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs KX Racing Software. This may take several minutes.
Status:
InstallShield
< Back
Next >
Cancel

**NOTE**

❍ *When the PC is running on the Windows 7 OS, the [Windows Security] window may open. If it does, check the [Always trust software from "Keihin Corporation".] box, and click [Install].*


Windows Security
Would you like to install this device software?
Name: KEIHIN CORPORATION Universal Serial Bus Controller
Publisher: Keihin Corporation
Always trust software from "Keihin Corporation".
Install
Don't Install
You should only install driver software from publishers you trust. How can I decide which device software is safe to install?

❍ *When the PC is running on the Windows Vista OS, the following window may open. If it does, select [Install this driver software anyway].*


Windows Security
Windows can't verify the publisher of this driver software
Don't install this driver software
You should check your manufacturer's website for updated driver software for your device.
Install this driver software anyway
Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or steal information.
See details

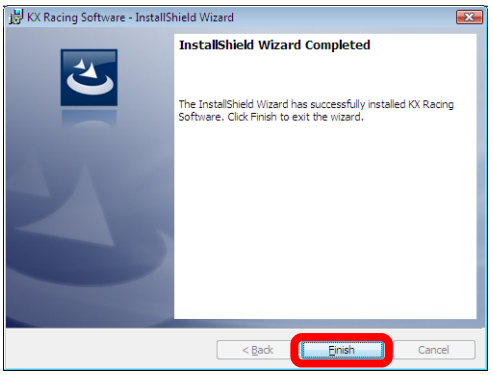
❍ *When the PC is running on the Windows XP OS, the following window may open. If it does, click [Continue Anyway].*

Hardware Installation
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

## 7 Finalising the software installation.

When the “InstallShield Wizard Completed” message is shown, click [Finish].

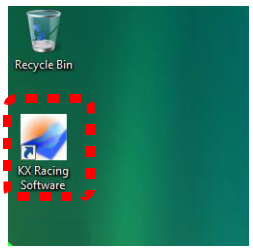
The software installation is now complete.


KX Racing Software - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed KX Racing Software. Click Finish to exit the wizard.
< Back
Finish
Cancel

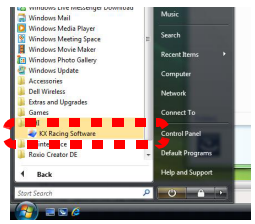
## 8 Check the shortcut on the screen.

The [KX Racing Software] shortcut is created and displayed on the desktop and on the Start menu.

Desktop




Start menu



The “KX Racing Software” has been installed successfully.

# 4-3 Installing the ECU controller driver

The ECU controller can only be used if the driver software has been installed on the PC.

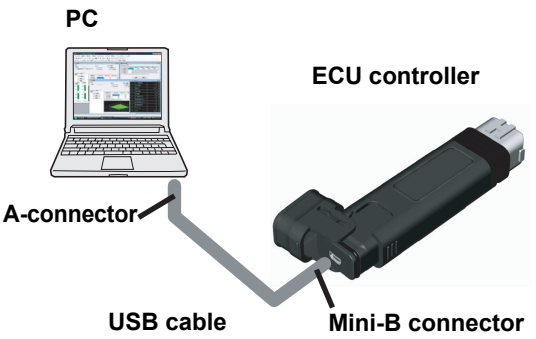
Install the ECU controller driver on the PC as follows.

- When you are using Windows Vista/7 OS: Use the procedure on this page.
- When you are using Windows XP OS: Use the procedure on Page 43.

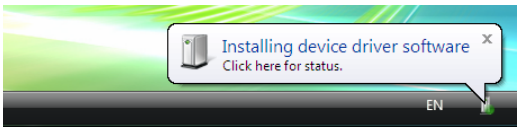
## Windows Vista/7

**1** With the computer at the desktop, plug the USB cable mini-B connector into the ECU controller socket.

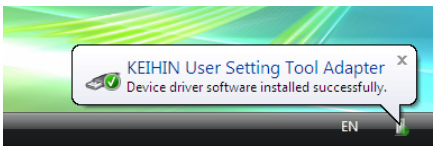
**2** Plug the USB A-connector into a PC.




Installation of the driver starts. The "Installing device driver software" message is displayed at the right bottom position of the screen during the installation.

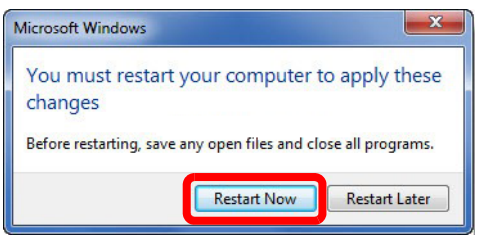



When the installation is complete, the "Device driver software installed successfully." message is displayed.




**NOTE**

❍ *When the following window opens, click [Restart Now]. The PC will restart.*

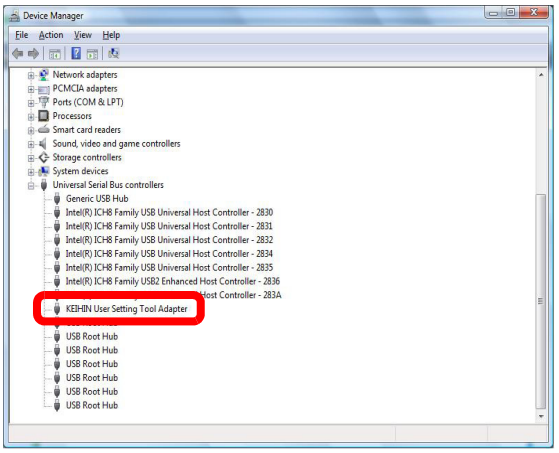

Microsoft Windows
You must restart your computer to apply these changes
Before restarting, save any open files and close all programs.
Restart Now
Restart Later

**(Reference)** **Windows Vista:**

After the driver software has been installed, the [Device Manager] will show the “KEIHIN User Setting Tool Adapter”.

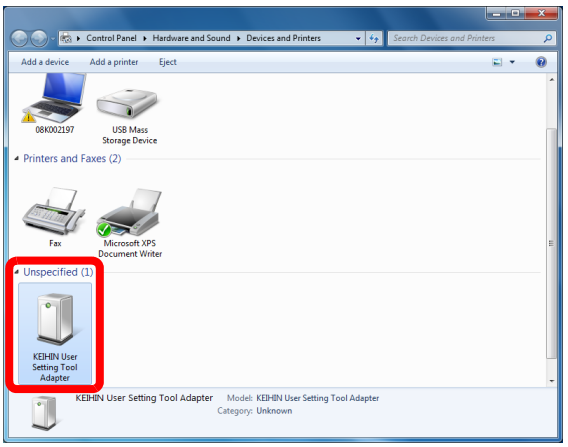
You can view this as follows.

1 Right-click the [Computer] to open a shortcut menu.
2 Click the [Properties].
3 Click the [Device Manager].
4 Click the [+] symbol of the [Universal serial bus controller].


Device Manager
File Action View Help
Network adapters
PCMCIA adapters
Ports (COM & LPT)
Processors
Smart card readers
Sound, video and game controllers
Storage controllers
System devices
Universal Serial Bus controllers
Generic USB Hub
Intel(R) ICH8 Family USB Universal Host Controller - 2830
Intel(R) ICH8 Family USB Universal Host Controller - 2831
Intel(R) ICH8 Family USB Universal Host Controller - 2832
Intel(R) ICH8 Family USB Universal Host Controller - 2834
Intel(R) ICH8 Family USB Universal Host Controller - 2835
Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836
KEIHIN User Setting Tool Adapter
USB Root Hub
USB Root Hub
USB Root Hub
USB Root Hub
USB Root Hub
USB Root Hub

**Windows 7:**

After the driver software has been successfully installed, [Devices and Printers] will show “KEIHIN User Setting Tool Adapter”.

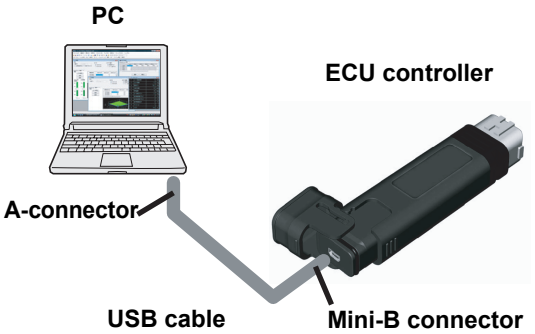



Now, the ECU controller driver has been installed successfully.

## Windows XP

**1** Plug the USB cable mini-B connector into the ECU controller socket.

**2** Plug the USB cable A-connector into a PC.




The “New hardware has been found” message is shown.

After a while, the [Found New Hardware Wizard] window will open.

**3** Select [No, not this time].

Select [No, not this time] and click [Next].

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
No, not this time
Click Next to continue.
< Back
Next >
Cancel

**4** Select [Install from the list or specific location (Advanced)].

Select the [Install from the list or specific location (Advanced)], and click [Next].

Found New Hardware Wizard
This wizard helps you install software for:
USB Device
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Click Next to continue.
< Back
Next >
Cancel

## 5 Start to install.

Hardware Installation
The software you are installing for this hardware:
KEIHIN User Setting Tool Adapter
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

Click [Continue Anyway].

The driver starts to be installed.

After the driver has been installed, the "Completing the Found New Hardware Wizard" message is shown.

## 6 Complete the installation.

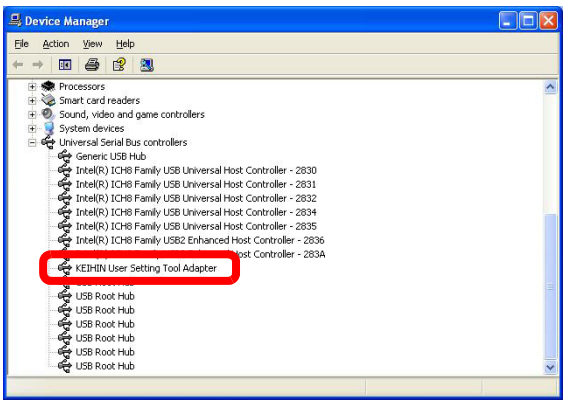
Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
KEIHIN User Setting Tool Adapter
Click Finish to close the wizard.
< Back
Finish
Cancel

Check to see that the "KEIHIN User Setting Tool Adapter" is displayed on the PC, and click [Finish].

The software installation is finished.

**(Reference)** The "KEIHIN User Setting Tool Adapter" will be shown in the window. It indicates that the driver for the ECU controller has been installed.

**(Reference)** After the driver software has been installed, the Device Manager will show the "KEIHIN User Setting Tool Adapter".


Device Manager
File Action View Help
Processors
Smart card readers
Sound, video and game controllers
System devices
Universal Serial Bus controllers
Generic USB Hub
Intel(R) ICH8 Family USB Universal Host Controller - 2830
Intel(R) ICH8 Family USB Universal Host Controller - 2831
Intel(R) ICH8 Family USB Universal Host Controller - 2832
Intel(R) ICH8 Family USB Universal Host Controller - 2834
Intel(R) ICH8 Family USB Universal Host Controller - 2835
Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836
KEIHIN User Setting Tool Adapter
USB Root Hub
USB Root Hub
USB Root Hub
USB Root Hub
USB Root Hub
USB Root Hub

You can view this as follows.

1 Right-click the [My Computer] to open a shortcut menu.
2 Click the [Properties].
3 Click the [Hardware] tab.
4 Click the [Device Manager].
5 Click the [+] symbol of the [USB (Universal Serial Bus) controllers].

Now, the ECU controller driver has been installed successfully.

# 4-4 Mounting the ECU controller

Mount the ECU controller on the motorcycle.

## ■KX250F 2011 to 2012 models/KX450F 2011 model

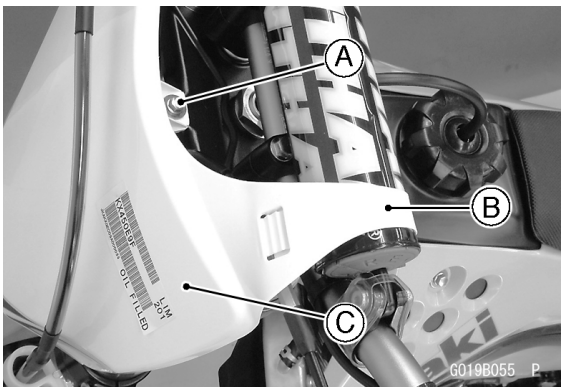
You must remove both the number plate and the fuel tank from the vehicle before mounting the ECU controller.

**NOTE**

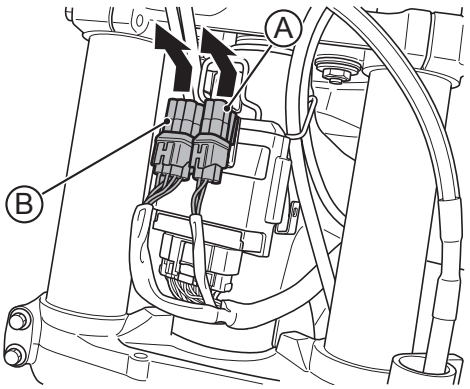
- *To use the KX FI calibration kit on the KX250F 2011 to 2012 models/KX450F 2011 model, an optional part is required in addition to the KX FI calibration kit. See the Table on Page 13, and purchase the required parts before using the kit.*
- *For information about disassembling/reassembling the vehicle parts, refer to the relevant Service Manual.*

**1** Remove the front number plate.

- Remove bolt Ⓐ.
- Remove band Ⓑ from the handlebar.
- Pull up and remove number plate Ⓒ.

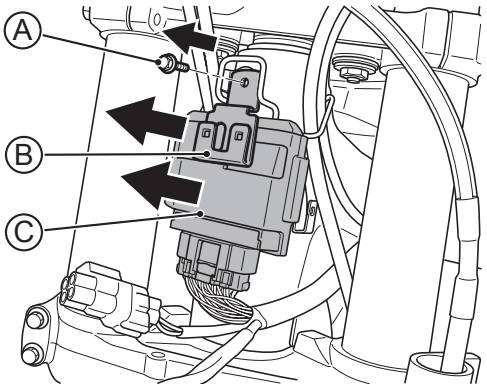



**2** Unplug both sub-harness connector Ⓐ and KDS connector Ⓑ.



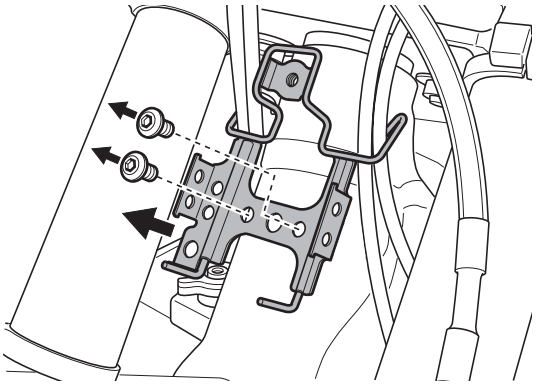
## 3 Remove the ECU.

- Remove bolt Ⓐ.
- Remove metal fixture Ⓑ.
- Remove ECU Ⓒ.




## 4 Remove the ECU bracket.

- Remove two bolts.
- Remove the ECU bracket.

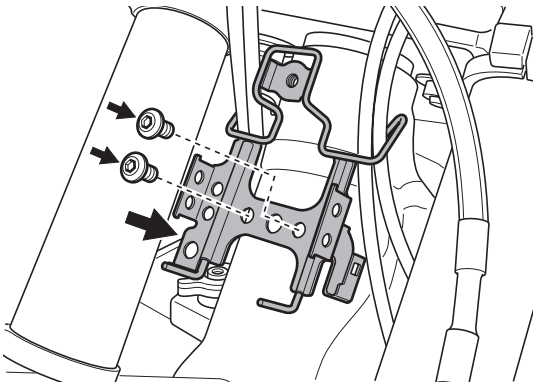


## 5 Mount the optional ECU bracket.

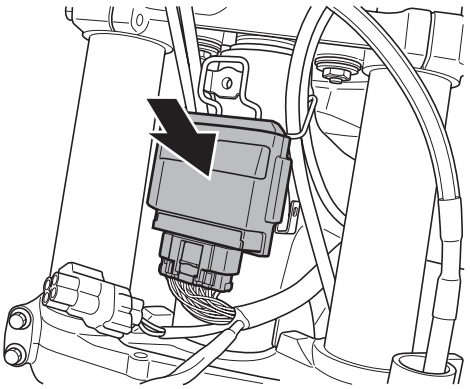
- Secure the ECU bracket using two bolts.

**NOTE**

❍ *The optional ECU bracket has a metal fixture at each side that is used to secure the harness connector.*

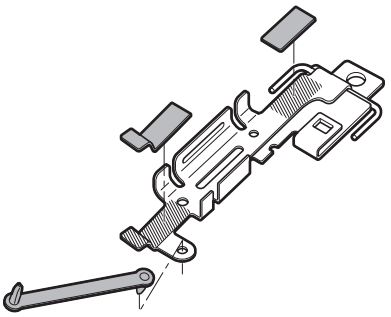


## 6 Mount the ECU.

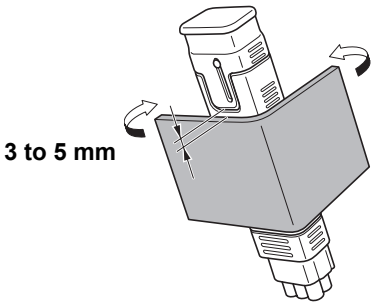


## 7 Mount the ECU controller.

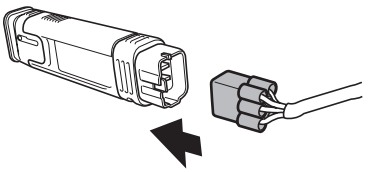
- Attach the upper and lower controller dampers to the controller bracket.
- Mount the sub-harness clamp to the controller bracket.



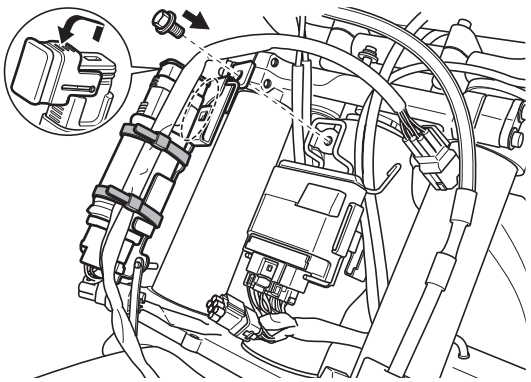
- Wrap the controller damper around the ECU controller.




- Mount the connector (white) of the controller sub-harness onto the ECU controller.



- Fit the ECU controller into the controller bracket.



**NOTE**

❍ *When the USB connector cover of the ECU controller is opened to an angle of approximately 90 degrees, it should be facing toward the front position.*

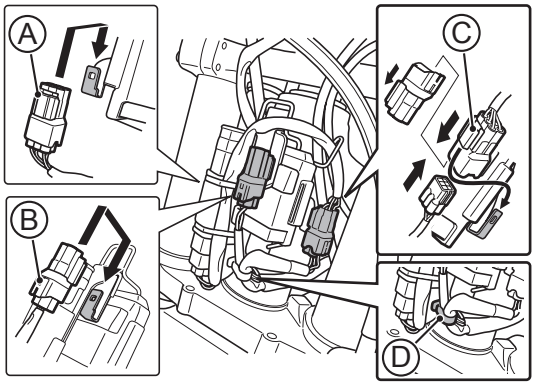
- Place the controller harness as illustrated, and secure the ECU controller and the harness using controller bands.

**NOTE**

❍ *Keep the sub-harness away from the KDS connector mounting position so that the connector can be mounted onto the bracket. Then, secure the sub-harness to the right front position of the ECU controller.*

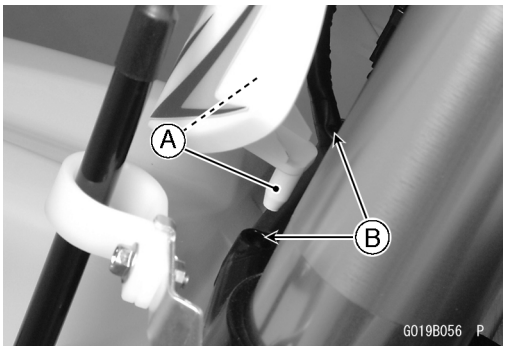
- Secure the controller bracket using bolts.

## 8 Install the connectors.




- Install connector Ⓐ (green) for the FI indicator light harness to the left side of the ECU bracket.
- Install KDS connector Ⓑ (4-pin) to the controller bracket.
- Remove the cap of sub-harness connector Ⓒ (6-pin).
- Plug the controller sub-harness connector into the sub-harness socket, and install it onto the right side of the ECU bracket.
- Secure only the harness that connect the controller sub-harness with the harness clamp Ⓓ.

## 9 Number plate installation.




- Insert the projections Ⓐ into the steering stem holes Ⓑ.

**NOTE**

❍ *Pass the clutch cable in front of the number plate.*

- Install the band on the handlebar, and tighten the mounting bolt.

**NOTE**

❍ *If you connect the PC to the ECU controller for further steps, you need not install the number plate.*

## ■KX450F 2009 to 2010 and 2012 models

You must remove both the number plate and the fuel tank from the MC before mounting the ECU controller.

**NOTE**

- *To use the KX FI calibration kit on the KX450F 2009 to 2010 and 2012 models, an optional part is required in addition to the KX FI calibration kit. See the Table on Page 13, and purchase the required parts before using the kit.*
- *For information about disassembling/reassembling the motorcycle, refer to the relevant service manual.*

**⚠ WARNING**

Gasoline is extremely flammable and can be explosive under certain conditions. Make sure the area is well-ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light. Do not smoke.

To avoid fire, do not remove the fuel tank when the engine is still hot. Wait until it cools down.

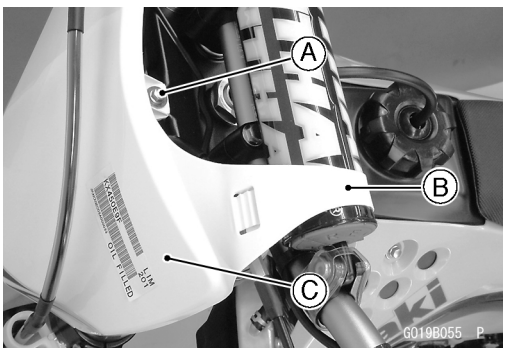
To make fuel spillage minimum, draw the fuel out from the fuel tank when the engine is cold.

Be prepared for fuel spillage; any spilled fuel must be completely wiped up immediately.

## Removing the number plate and fuel tank

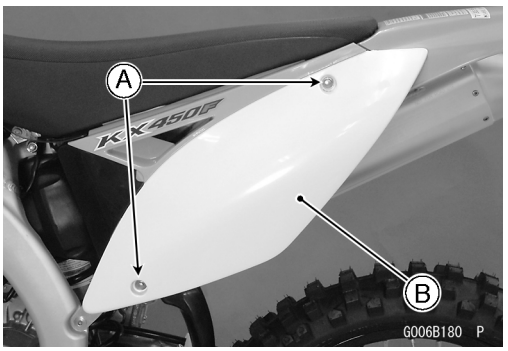
**1** Remove the front number plate.

- Remove bolt Ⓐ.
- Remove band Ⓑ from the handlebar.
- Pull up and remove number plate Ⓒ.



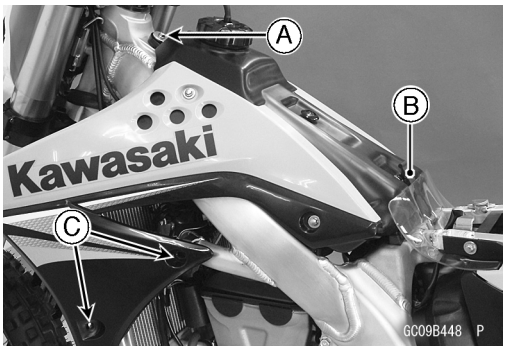
## 2 Remove the seat.

- Remove bolts Ⓐ.
- Remove both sidecovers Ⓑ.




## 3 Remove the fuel tank.

- Remove fuel tank bolt Ⓐ.
- Remove band Ⓑ.
- Remove radiator shroud bolts Ⓒ.

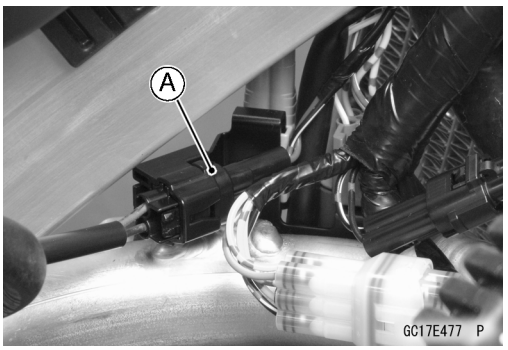



## 4 Unplug the fuel pump lead connector.

- Lift up the fuel tank, and remove the fuel pump lead connector Ⓐ.

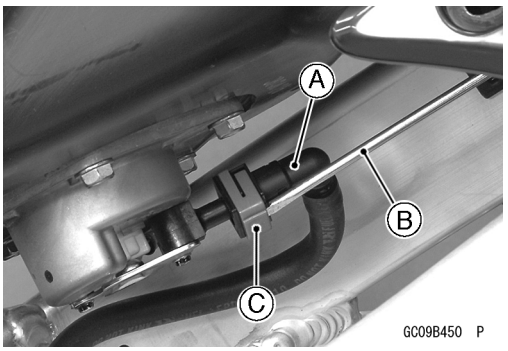
**NOTE**

❍ *Location of the fuel pump lead connector varies depending on the model year. For details, refer to the relevant Service Manual for the model.*

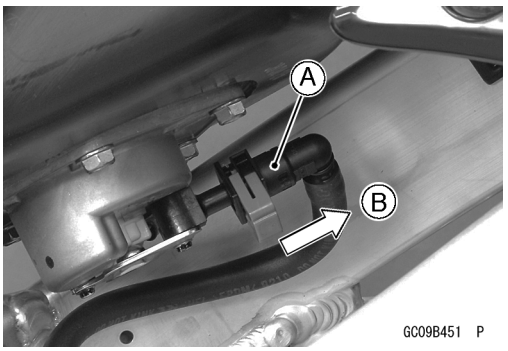



## 5 Release the connector lock.

- Place a piece of cloth around the fuel hose joint Ⓐ.
- Insert the blade of flat-blade screwdriver Ⓑ into the slit of joint lock Ⓒ.
- Turn the screwdriver to disconnect the joint lock.



## 6 Remove the fuel tank.




- Disconnect fuel hose joint Ⓐ from the fuel outlet pipe Ⓑ.

**⚠ WARNING**

Be prepared for fuel spillage; any spilled fuel must be completely wiped up immediately.

When the fuel hose is disconnected, fuel spills out from the hose and the pipe because of residual pressure. Cover the hose connection with a piece of clean cloth to prevent fuel spillage.

- Remove the fuel tank, and place it on a flat surface.

**NOTE**

❍ *When you store the fuel tank, take care not to apply any load to the fuel outlet pipe.*

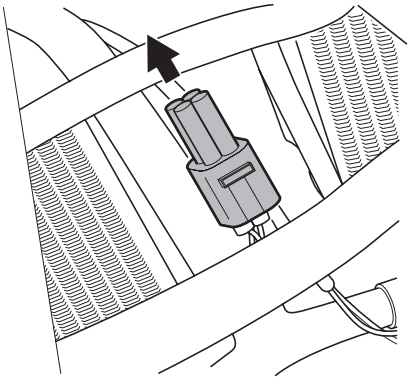
**⚠ WARNING**

Store the fuel tank in an area which is well-ventilated and free from any source of flame or sparks. Do not smoke in this area. Place the fuel tank on a flat surface and plug the fuel pipes to prevent fuel leakage.

## Mounting the ECU controller

**1** Remove the sub-harness connector cap.

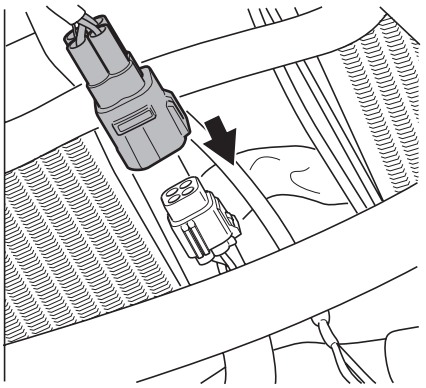
- Remove the tapes that secure the connectors to the right and left of the radiator.
- Remove the connector cap.



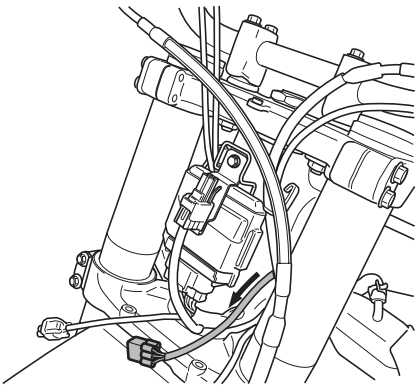
**2** Plug the ECU controller sub-harness into the socket.

**NOTE**

❍ *Use the optional controller sub-harness to connect to the controller.*

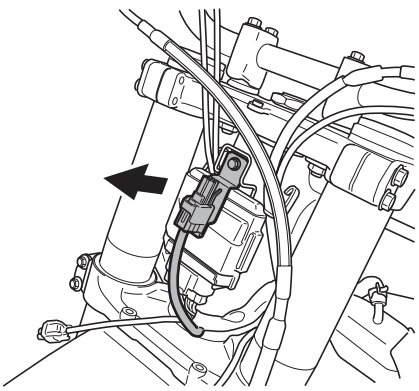


**3** Place the controller sub-harness alongside the ECU main harness.



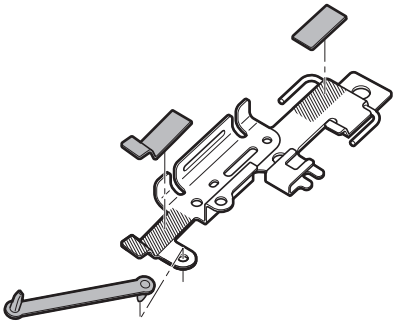
**4** Unplug the KDS connector from the socket.

- Remove the KDS connector bracket bolt.
- Remove the KDS connector from the bracket.

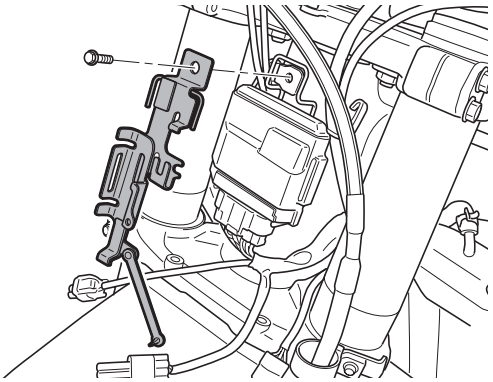


## 5 Install the controller bracket.

- Attach the upper and lower dampers to the controller bracket.
- Attach the sub-harness clamp.

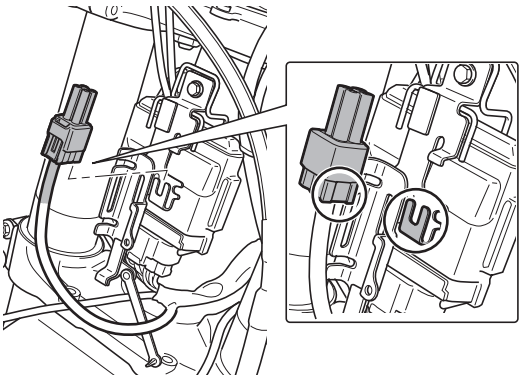


- Use the same bolt (that you removed in Step 4) to secure the controller bracket.



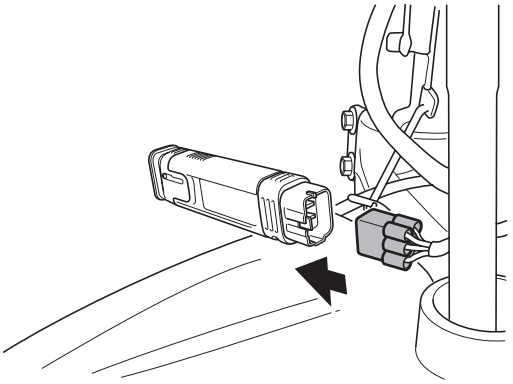
## 6 Install the KDS connector.

- Install the KDS connector on the RH side of the controller bracket.

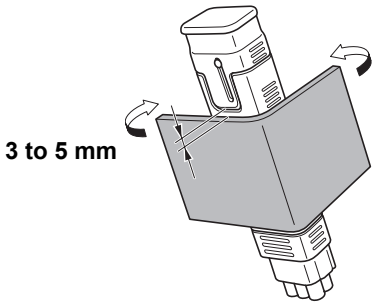


# 7 Mount the ECU controller.

- Connect the ECU controller to the sub-harness.



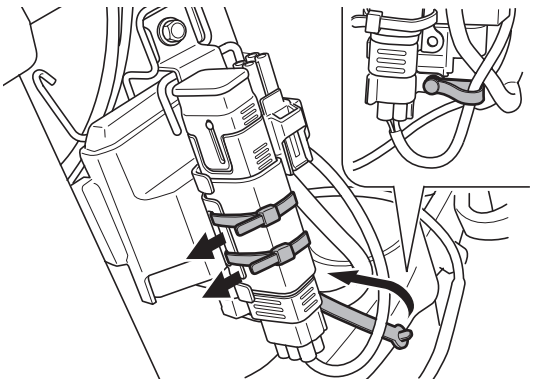
- Wrap the controller damper around the ECU controller.




- Secure the ECU controller to the bracket with the two bands.

**NOTE**

❍ *Ensure the cut-outs on the USB connector cover are facing forward so that the cap can be opened.*



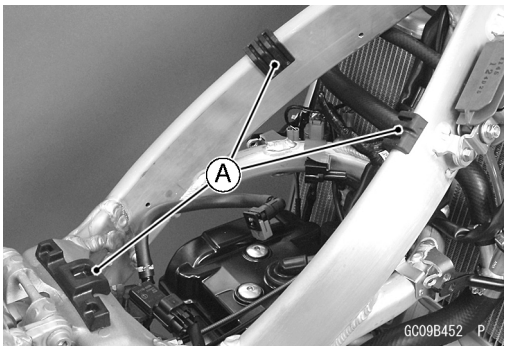
- Secure the controller and KDS connection cables with the harness clamp.

## Installing the fuel tank and number plate

**NOTE**

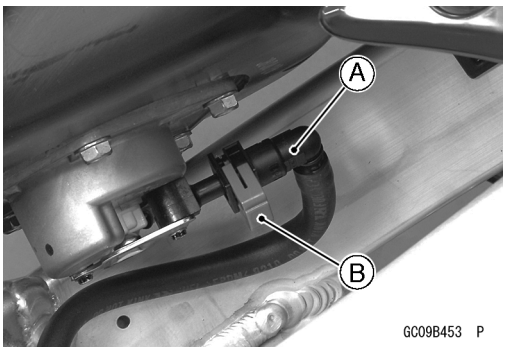
❍ *Place the fuel hose in the correct position.*

❍ *Check that the dampers Ⓐ are in place. If there are any signs of deterioration or cracking, replace the dampers.*




**1** Connect the fuel hose securely.

- Slide the fuel hose joint Ⓐ onto the fuel outlet pipe until it clicks.
- Push the joint lock Ⓑ until it clicks home.

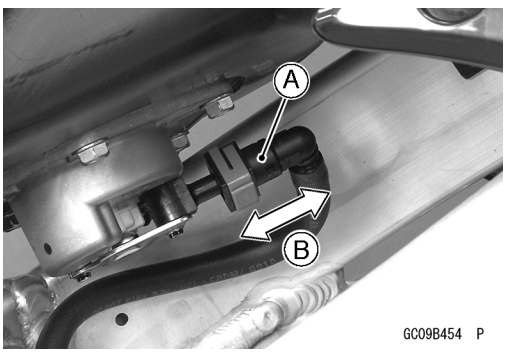



**2** Check the hose joint connection.

- Push and pull the hose joint Ⓐ two or more times Ⓑ, and make sure that it is securely locked.

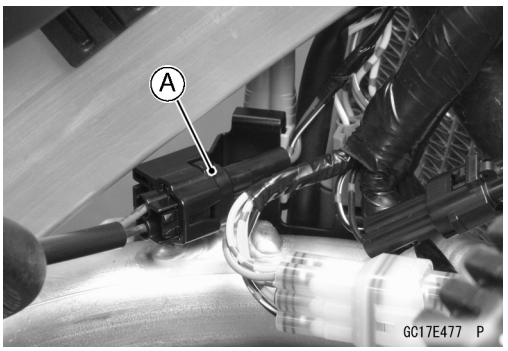
**⚠ WARNING**

Make sure the hose joint is installed correctly on the delivery pipe or the fuel could leak.



## 3 Fuel pump connector lead.

Plug fuel pump lead connector Ⓐ into its socket.

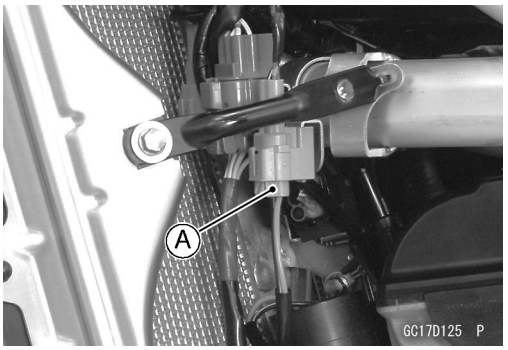



**NOTE**

❍ *Location of the fuel pump lead connector varies depending on the model year. For details, refer to the relevant Service Manual for the model.*

## 4 Bleed the air from the fuel pipe.

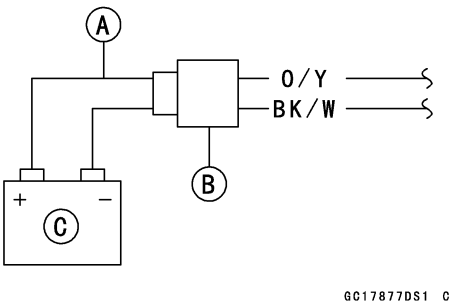
● Disconnect capacitor lead Ⓐ.




● Connect the power supply harness Ⓐ to the capacitor lead connector Ⓑ.

● Connect the power supply harness Ⓐ to the 12 Vdc battery terminals Ⓒ.

**(Reference)** Operate the fuel pump to purge any air and prime the system for easier engine start up.

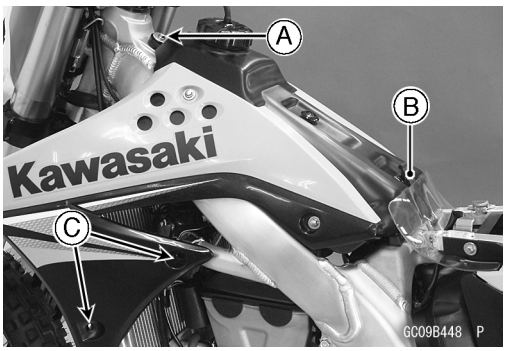



● Make sure that the fuel pump stops sounding. Then, disconnect the power supply harness, and plug the capacitor lead connector into its socket.

**NOTE**

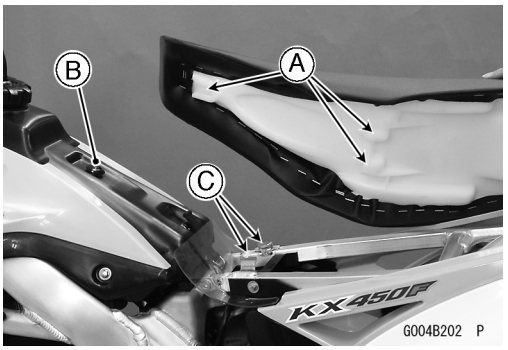
❍ *If you do not start the engine but use the battery to proceed to the following steps, you need not disconnect the power supply harness.*

## 5 Fuel tank installation.



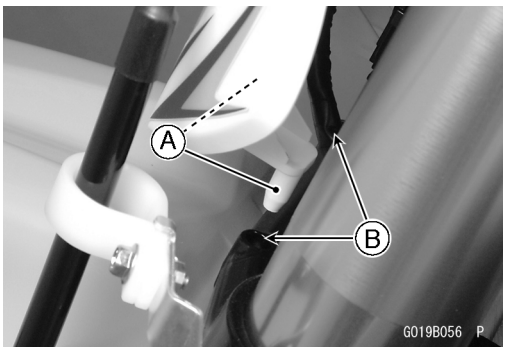

- Mount and secure radiator shroud bolts Ⓒ.
- Mount band Ⓑ.
- Secure fuel tank bolt Ⓐ.

## 6 Install the seat.




- Insert seat hooks Ⓐ under the flange collar Ⓑ and brackets Ⓒ.
- Tighten the seat mounting bolts.

## 7 Number plate installation




- Insert the projections Ⓐ into the steering stem holes Ⓑ.

**NOTE**

❍ *Pass the clutch cable in front of the number plate.*

- Install the band on the handlebar, and tighten the mounting bolt.

**NOTE**

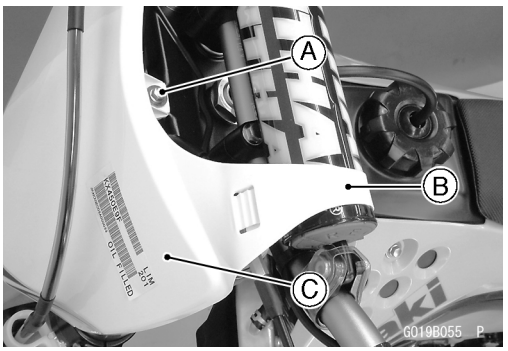
❍ *If you connect the PC to the ECU controller for further steps, you need not install the number plate.*

# 4-5 Connecting the ECU controller to the PC

Connect the ECU controller to the PC using the USB cable.

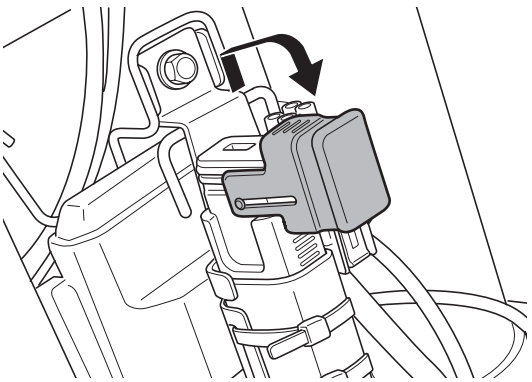
**1** Remove the number plate.

- Remove bolt Ⓐ.
- Remove band Ⓑ from the handlebar.
- Pull up and remove number plate Ⓒ.



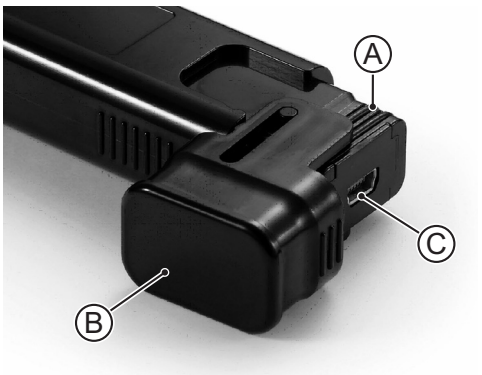

**2** Open the USB connector cover.

| NOTICE |
| --- |
| Do not leave the USB connector cover open when the USB cable is not connected. If the cover is left open, water and dust could enter the ECU controller, and the ECU controller could be damaged. |



**NOTE**

- *Before closing USB connector cover Ⓑ, check to see that O-ring Ⓐ is not contaminated with dust, sand or other objects. If contaminated, wipe the O-ring using a clean cloth.*
- *To facilitate smooth opening and closing of USB connector cover Ⓑ, apply a small amount of clean 4-stroke engine oil to O-ring Ⓐ. After applying the oil, wipe off excess oil using a clean cloth.*
- *Do not apply oil to USB connector Ⓒ itself.*




**3** Connect the mini-B end of the USB cable to the ECU controller.

**4** Connect the other end of the USB cable to a PC.

# 4-6 Vehicle recognition

The vehicle recognition process must be completed before viewing or editing ECU data settings.

**NOTE**

❍ *The vehicle recognition process is required in the following cases. From the Startup menu, select [Configuration] and [Start Communication] and carry out the vehicle recognition process.*

- When you use the KX Racing Software for the first time,
- If the vehicle information of your motorcycle does not match the information stored in the ECU controller.
  (A "The ECU controller and the connected vehicle contain different types of vehicle information." message is displayed at the bottom of the main screen. [See] Page 33)
- If you have replaced the ECU controller.

## 1 Make sure that the ECU controller is already connected to the PC.

**[See]** "4-5 Connecting the ECU controller to the PC" (Page 58)

## 2 Power supply.

Start the engine, or connect the 12 Vdc battery to the MC.

## 3 Starting "KX Racing Software".

Double-click the [KX Racing Software] icon, or select [KX Racing Software] from the Start menu.

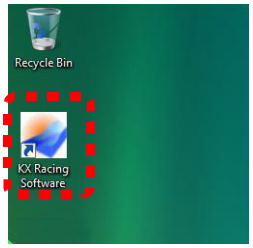
A message requesting activation of the vehicle recognition process is displayed.

**NOTE**

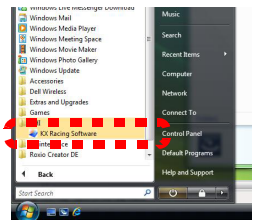
❍ *If a confirmation message is not displayed, check the connection between ECU controller and PC.*

**Windows Vista**

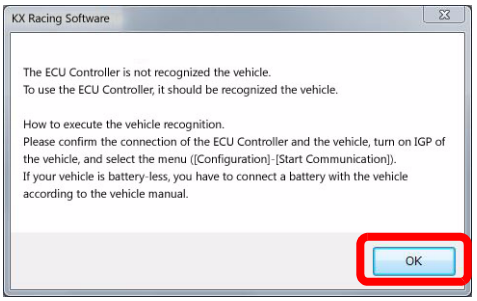
Desktop




Start menu



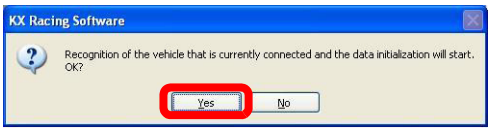
**4** Click [OK].


KX Racing Software
The ECU Controller is not recognized the vehicle.
To use the ECU Controller, it should be recognized the vehicle.
How to execute the vehicle recognition.
Please confirm the connection of the ECU Controller and the vehicle, turn on IGP of the vehicle, and select the menu ([Configuration]-[Start Communication]).
If your vehicle is battery-less, you have to connect a battery with the vehicle according to the vehicle manual.
OK

**5** From the menu, select [Configuration] - [Start Communication] ( ).

Then, the confirmation message for the vehicle recognition process and data initialization appears.

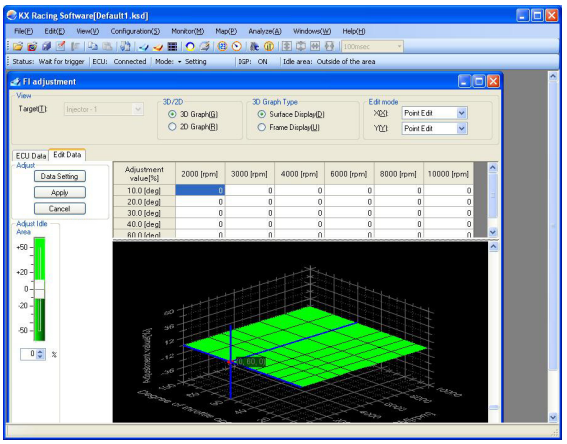
**6** Select [YES] to start initialization.


KX Racing Software
Recognition of the vehicle that is currently connected and the data initialization will start.
OK?
Yes
No

"The vehicle recognition is being executed." message is displayed during its process.

When the vehicle recognition process is complete, the FI adjustment window opens and a new Setting data is created.

**[See]** "5-2 Creating new Setting data" (Page 63)



Optimum engine control parameters can be set based on either riding data analysis or by using preset values.

## 5-1 Using the preset Setting data

The “KX Racing Software” CD-ROM contains reference data to help with MC setup.

From the Start menu, select [File] - [Open] - [Settings Data File...].

For KX250F 2011 to 2012 models:\Setting Data Sample\English\KX250F

For KX450F 2009 to 2011 models:\Setting Data Sample\English\'09-'11KX450F

For KX450F 2012 model: \Setting Data Sample\English\'12KX450F

**NOTE**

- *The setting data files for the following models are incompatible with each other: KX250F 2011 to 2012 models, KX450F 2009 to 2011 models, and KX450F 2012 model. Select and use the correct setting data file for the vehicle.*
- *The English language software version cannot open Japanese data files, or data created by the Japanese version.*
  *English files names end with “-En”.*
- *For the KX450F 2012 model, you can change the settings by simply replacing the DFI Setting Data Selection connector with another connector attached to the motorcycle. Before replacing the connectors, disconnect the cable from the battery. If you do not disconnect the cable from the battery, the settings that existed before the connector was replaced will remain.*

| No. | Description | Purpose |
|---|---|---|
| 1 | **Increase the rate of fuel injection (Richer Fuel Setting-En.ksd)** | Use this setting to richen the fuel mixture by 5% from the stock setting. |
| 2 | **Reduce the rate of fuel injection (Leaner Fuel Setting-En.ksd)** | Use this setting to lean the fuel mixture by 5% from the stock setting. |
| 3 | **Advance Ignition Timing (Advanced Ignition Setting-En.ksd)** | Use this setting to advance ignition timing by 3 degrees from the stock setting. |
| 4 | **Retard Ignition Timing (Retarded Ignition Setting-En.ksd)** | Use this setting to retard ignition timing by 3 degrees from the stock setting. |

| No. | Description | Purpose |
|---|---|---|
| 5 | **Improve traction in hard or slippery conditions (Hard Riding Surface-En.ksd)** | Use these settings for hard or slippery conditions where traction is poor. In such conditions traction can be improved by retarding ignition timing and richening the fuel mixture. |
| 6 | **Improve traction in soft or sandy conditions (Soft Riding Surface-En.ksd)** | Use these settings for sand and other soft conditions where traction is high. The adjustment of the fuel injection amount and the ignition timing optimizes the traction. |
| 7 | **For entry level riders (Beginner-En.ksd)** | Use these settings to suppress engine power output. Ignition timing is retarded and fuel mixture is richened. |

- Evaluate engine performance using the different fuel injection data settings (#1, #2 and stock). Also evaluate engine performance using different ignition timing data settings (#3, #4 and stock).
- Test ride with data settings #1 ~ #4 and stock to identify the best riding quality in each area. Then fine tune each area parameter to get the optimum engine control settings. If any adjustment reduces ride quality, reset the area settings and repeat engine control setup.
- Use data settings #5 & #6 depending on surface conditions. Note that these settings are only examples and may not offer the optimum ride quality.
- Use settings data #7 to intentionally suppress engine power output for entry level riders.

# 5-2 Creating new Setting data

Create new setting data. Adjust the rate of fuel injection and ignition timing according to the throttle opening and engine speed.

You can also create setting data for a vehicle currently not connected.

## When creating setting data of the vehicle currently connected:

From the menu, select [File] - [New] - [Connected MC].

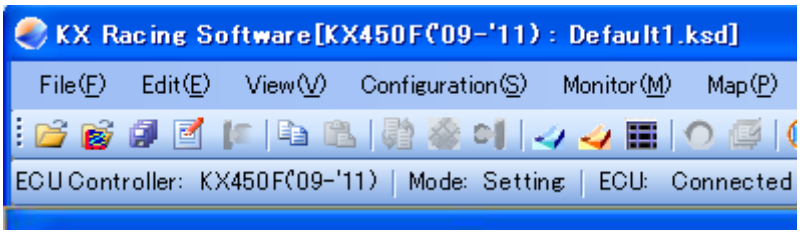
Setting data of the currently connected vehicle will be created.

## When creating setting data of the vehicle other than the one currently connected:

From the menu, select [File] - [New] - [(Model)] - [(Model year)].

Setting data of the selected model and model year will be created.

**(Reference)** You can display the Main window and check which model is currently selected for the displayed setting data.



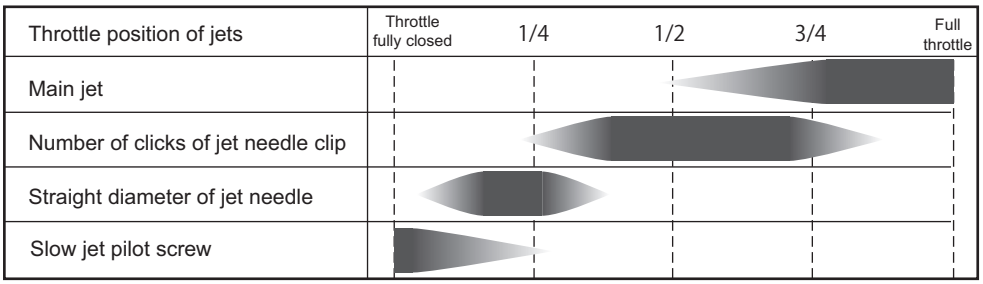

- To change fuel injection Settings data, see: Page 65
- To change ignition timing Settings data, see: Page 76

**(Reference)** When the vehicle recognition process ends, the Setting data is created.

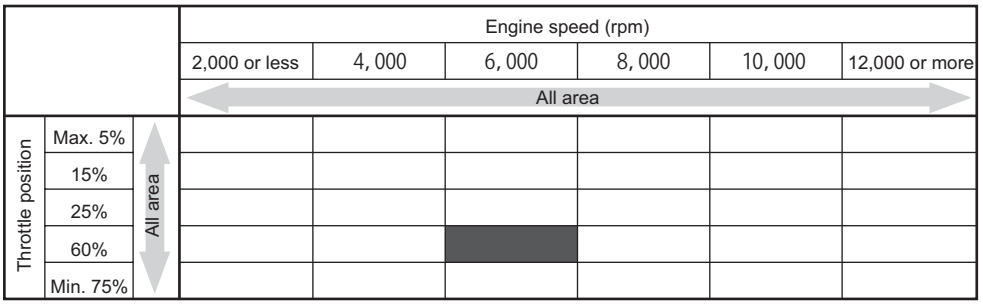
## (POINT) Carburetor system and fuel injection system

A carburetor based system relies on throttle control, whereas fuel injection, in addition to throttle control, also has access to engine speed and therefore offers finer adjustment.

### Carburetor system



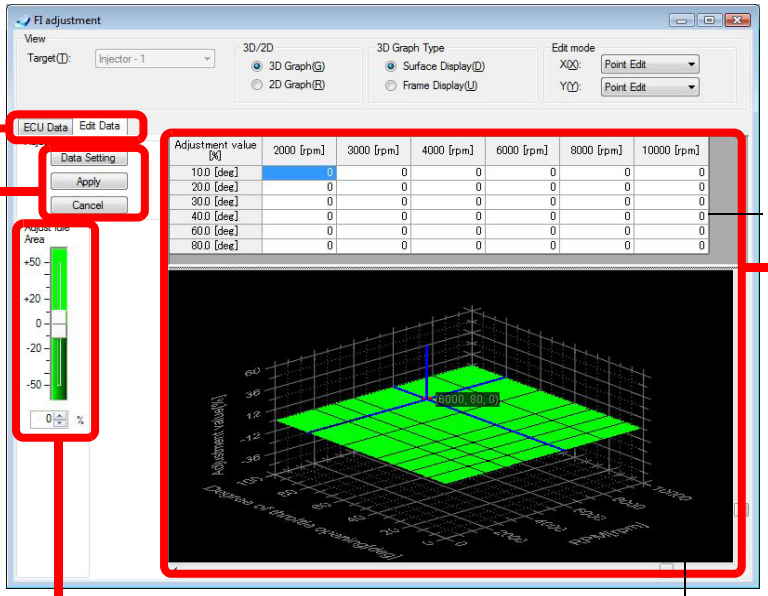

### Fuel injection system



# 5-3 Changing the fuel injection values

From the [FI Adjustment] window, you can increase or decrease the rate of fuel injection (%) in each cell.

From the Start menu, select [View] - [FI Adjustment] ( /F1 key), and the [FI Adjustment] window opens.




Map sheet

Graph window

**Step 1: Select the data to display**
You can switch the data to be shown on the map sheet and graph window.

[Edit Data] tab: Displays the current editing data.
[ECU Data] tab: Displays the current Setting data of the ECU.

**[See]** Page 66

**Step 2: Adjust the Setting map data in the graph window**
You can edit the current settings on the map sheet or in the graph window. Any change to the map sheet is also applied to the graph window, and vice versa.

**[See]**
To edit the map sheet see page 67
To edit the graph window see page 69

**Step 3: Adjusting the idling area**
The [Adjust Idle Area] adjusts the Settings data in the engine idling area.

**[See]**
For the [Adjust Idle Area] see page 74

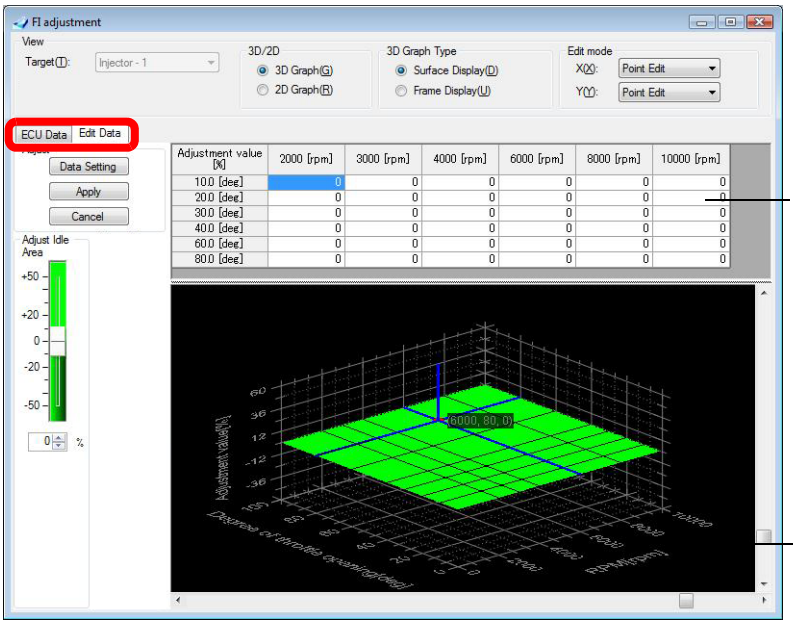
**Step 4: Sending the Setting data to the ECU.**
Send the Setting data from the PC to the ECU.

[Data Setting]: Sends the Setting data to the ECU. If the motorcycle's electric power is turned OFF, this data becomes invalid and the previous Setting data is made valid.
[Apply]: Sends the current Setting data to the ECU. The data is applied even if the MC electric power is turned OFF.
[Cancel]: Makes the Settings data sent by the [Data Setting] invalid, and the Settings data with full throttle position is made valid.

**[See]** Page 75

## Step 1: Select the data to display

You can switch between the map sheet and graph window for data display by clicking the [Edit Data] and [ECU Data] tabs.




### ■[Edit Data] tab

Displays the current editing data.

### ■[ECU Data] tab

Displays the current Setting data of the ECU. It displays numerical data only. You cannot edit or send data.

**NOTE**

❍ *If the PC is disconnected from the ECU or if the ECU power supply is turned Off, "OFFLINE" is shown in the map sheet cell.*

| Adjustment value [%] | 0 [rpm] | 0 [rpm] | 0 [rpm] | 0 [rpm] | 0 [rpm] | 0 [rpm] |
|---|---|---|---|---|---|---|
| 0 [deg] | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE |
| 0 [deg] | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE |
| 0 [deg] | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE |
| 0 [deg] | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE |
| 0 [deg] | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE |
| 0 [deg] | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE |

## Step 2: Adjust the Setting map data in the graph window

You can edit the current settings on the map sheet or in the graph window.
Any change to the map sheet is also applied to the graph window, and vice versa.

**NOTE**

- *The rate of fuel injection is not changed in the engine idling area.*
  *You can adjust the rate of fuel injection in the idling area using the [Adjust idling area] scale or from the adjusting value box.*
  *[See] " Step 3: Adjusting the idling area" (Page 74))*
- *Although a value between ±50% can be entered, the ECU adjustment range is limited. A value which exceeds this limit will default to the maximum or minimum available from the ECU.*
- *ECU adjustment range*
  *KX250F and KX450F: Between -10 % and +20 %*

### ■Adjusting a value on the map sheet

The map sheet displays the ECU data or editing data that you have selected.

| Adjustment value [%] | 2000 [rpm] | 3000 [rpm] | 4000 [rpm] | 6000 [rpm] | 8000 [rpm] | 10000 [rpm] |
|---|---|---|---|---|---|---|
| 10.0 [deg] | 0 | 0 | 0 | 0 | 0 | 0 |
| 20.0 [deg] | +1 | 0 | +10 | 0 | 0 | 0 |
| 30.0 [deg] | 0 | +15 | +50 | +26 | +16 | 0 |
| 40.0 [deg] | 0 | +2 | +19 | +25 | +18 | 0 |
| 60.0 [deg] | 0 | +12 | +14 | +25 | +14 | 0 |
| 80.0 [deg] | 0 | 0 | 0 | +21 | 0 | 0 |

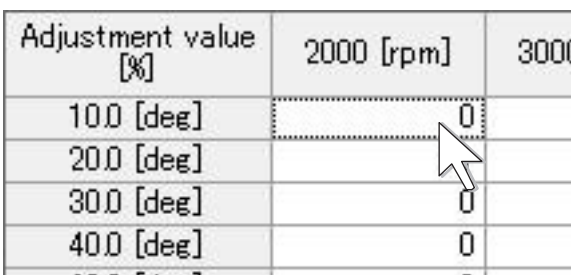
The map sheet has the following background colors.

| Color | Display data |
|---|---|
| **White** | Unadjusted values are shown in white. |
| **Yellow** | Adjusted values are shown in yellow. |
| **Red** | Any adjusted values which exceed the ECU setting range are shown in red. |
| **Aqua** | Fine-tuned values being set in the ECU are shown in aqua. |

**(Reference)** Once values have been saved after editing, the file data is fixed and the cells change to white.

**1** Double-click the cell that you wish to edit.

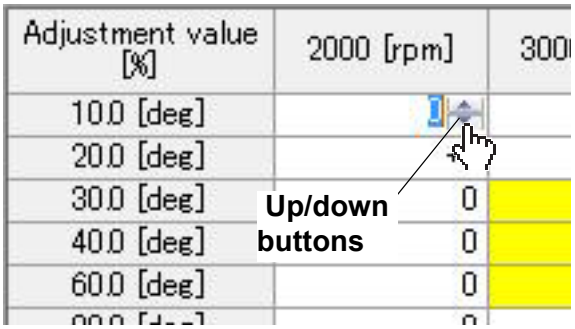
The up/down buttons appear at the right of the cell.



## 2 Entering an adjustment value.

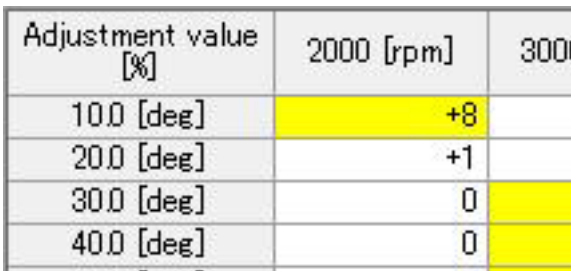
Either click on the Up or Down arrow with the mouse, use the keyboard Up or Down arrows or simply type in the value.

To cancel the current setting, just press the [ESC] key on the keyboard.



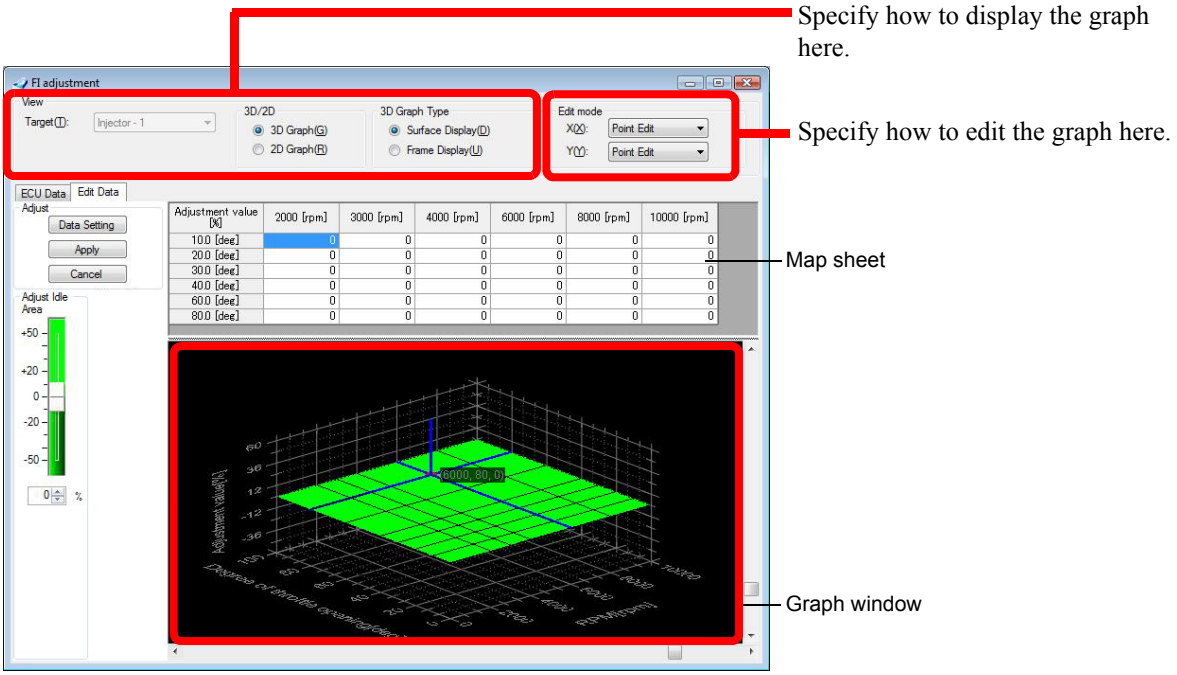

## 3 Press the [Enter] key on the keyboard.

Once an adjustment value is entered the cell color changes to yellow.



## ■Adjusting a value in the graph window

The values you have adjusted on the map sheet are converted into graph data, and its graph is displayed in the “graph window”.



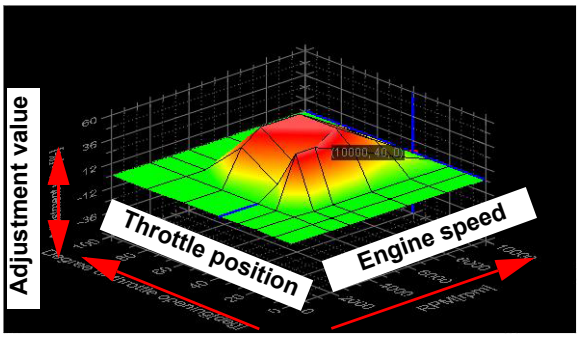
## Specifying how to display the graph

Click [3D Graph] or [2D Graph] of the [3D/2D] to select the 3 or 2-dimensional display. When you use the [3D Graph], select [Surface Display] or [Frame Display] of the [3D Graph Type] to select the display type.

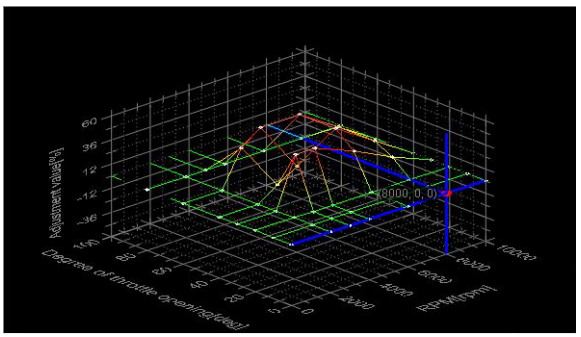
### [3D Graph]

Engine speed is displayed on the X-axis, throttle position on the Y-axis and adjustment values on the Z-axis.

#### Surface display



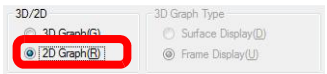

#### Frame display

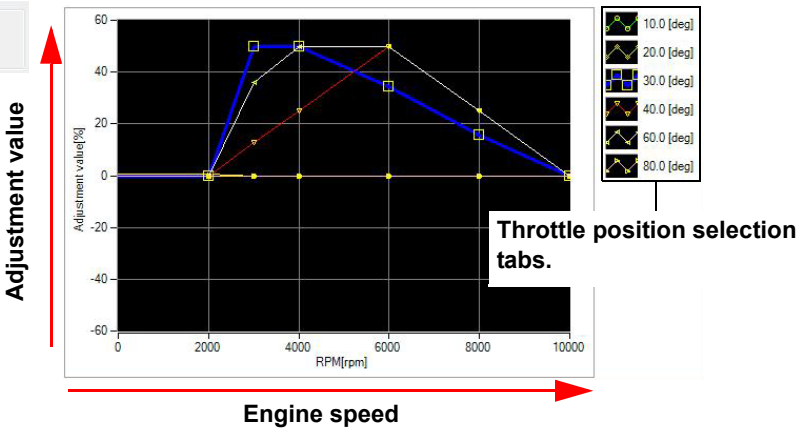


### [2D graph]

Engine speed is displayed on the X-axis according to throttle position, with the adjustment values displayed on the Z-axis.

#### Surface display



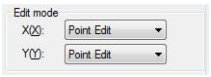
## Graph editing

When you drag the point where the graph window lines cross, you can adjust the value. Also, you can change the editing method.

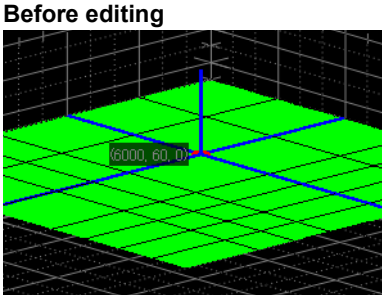
The following explains how to edit the graph if you select [3D graph] and [Surface Display].

**[Point Edit]**
You can adjust values of the selected point only.

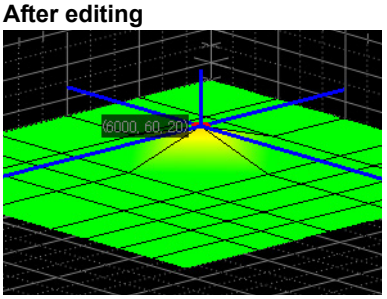
**Point Edit (on the X- and Y-axes)**




**Before editing**

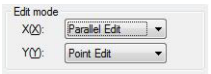



**After editing**

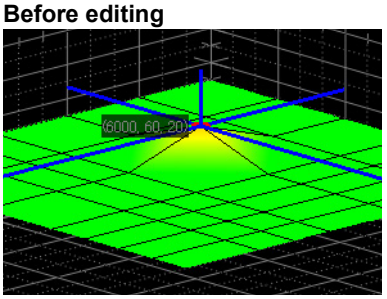



**[Parallel Edit]**
You can move the entire axis position of the selecting data in the window. The “editing on the Y-axis only” is the same as the “editing on the X-axis only”.

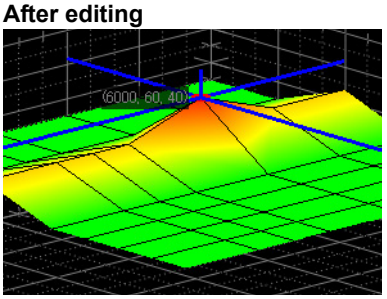
**Parallel Edit (on the X-axis only)**




**Before editing**

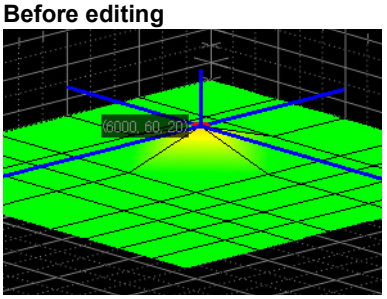



**After editing**

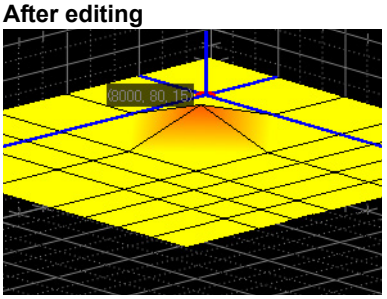



**Parallel Edit (on the X- and Y-axes)**

**Before editing**

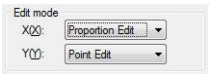



**After editing**

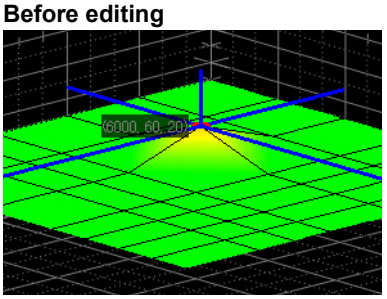


**[Edit proportionally]**
You can proportionally move the entire axis position of the selecting data in the window. The “editing on the Y-axis only” is the same as the “editing on the X-axis only”.

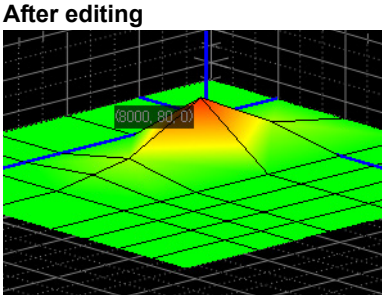
**Proportion Edit (on the X-axis only)**



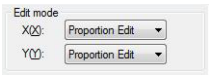

**Before editing**



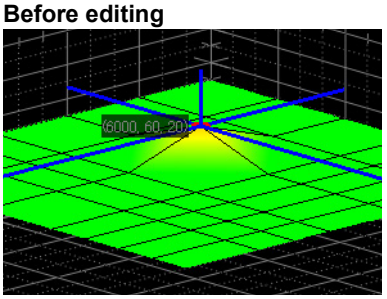

**After editing**



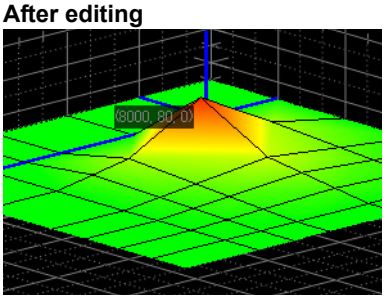

**Proportion Edit (on the X- and Y-axes)**




**Before editing**



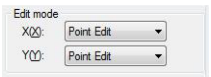

**After editing**



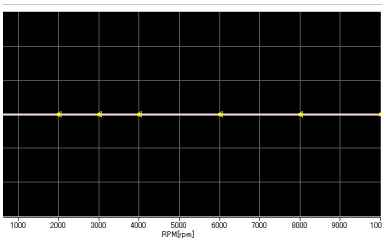

The following explains how to edit the graph if you select [2D Graph].
When you display the 2D graph, you can select the throttle position options to edit the throttle position graph.

**[Point Edit]**
You can adjust values of the selected point only.

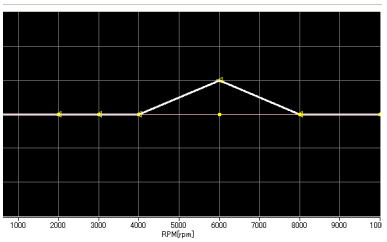
**Point Edit (on the X- and Y-axes)**




**Before editing**



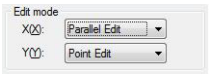

**After editing**



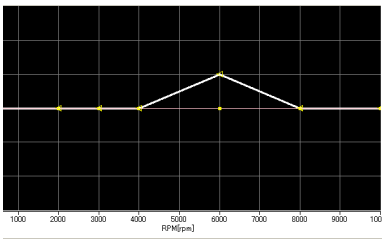
### [Parallel Edit]

You can move the entire axis position of the selecting data in the window. The “editing on the Y-axis only” is the same as the “editing on the X-axis only”.

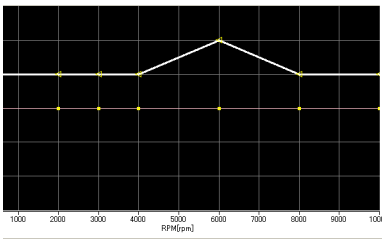
#### Parallel Edit (on the X-axis only)




**Before editing**

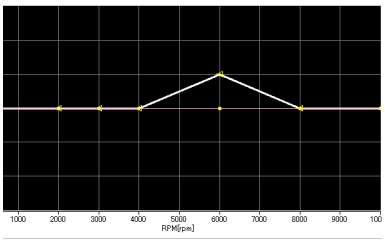



**After editing**

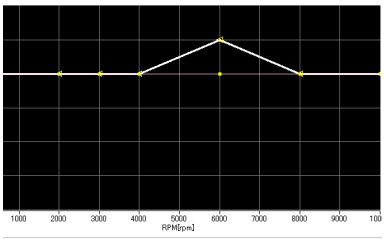



#### Parallel Edit (on the X- and Y-axes)

**Before editing**



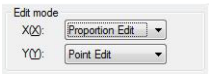

**After editing**



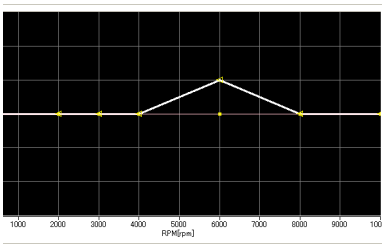

### [Proportion Edit]

You can proportionally move the entire axis position of the selecting data in the window. The “editing on the Y-axis only” is the same as the “editing on the X-axis only”.

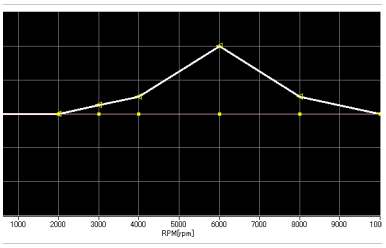
#### Proportion Edit (on the X-axis only)



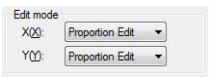

**Before editing**



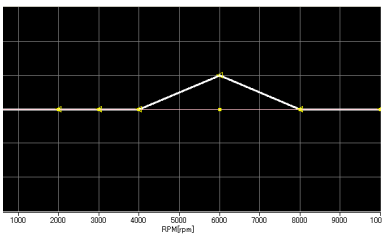

**After editing**



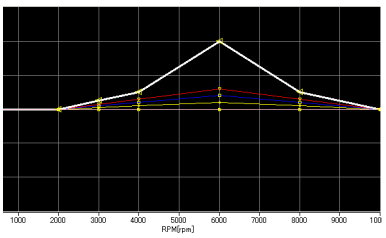

#### Proportion Edit (on the X- and Y-axes)




**Before editing**




**After editing**



# Step 3: Adjusting the idling area

Enter a value in [Adjust Idle Area] to adjust the engine idling speed.

The [Adjust Idle Area] is not displayed on the map sheet and in the graph window.

You can enter the value within ±50%. If the entry exceeds the ECU setting range, the value defaults to the maximum or minimum available from the ECU.

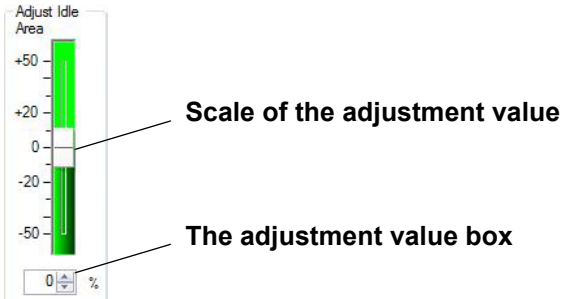
**NOTE**

- *The engine idle parameters are defined by the ECU.*
  *- Engine speed: 2,100 rpm or lower*
  *- Throttle valve opening: 0.7 degree or less*
- *ECU adjustment range*
  *KX250F and KX450F: Between -10 % and +20 %*
- *Fuel injection Setting data that is edited on either a map or graph does not effect the engine idle Setting data.*
- *The idle Setting data has no effect on 2D or 3D graphs.*

### Changing the [Adjust Idle Area] value

Drag the scale up or down, or enter a value in the adjustment value box using the numeric keypad.

**(Reference)** You can adjust the value by clicking the up/down button of the adjustment value box or by pressing the up/down arrow key of the keyboard.



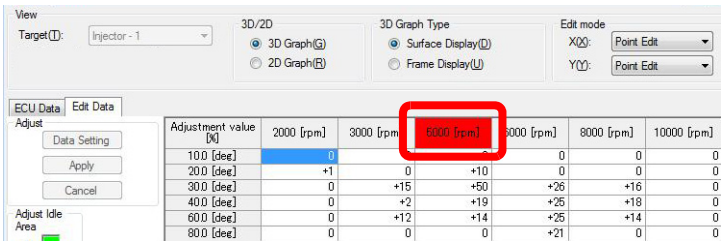
## Step 4: Sending the Setting data to the ECU.

There are two methods of transferring data to the ECU. Select [Data Setting] to store data in the ECU until it powers down or [Apply] for permanent storage.

Data cannot be transferred in the following cases:

- If the vehicle information of the setting data, the vehicle information of the ECU controller, and the actual vehicle model do not match with each other
- The [ECU Data] is selected (**[See]** Page 66)
- If the ECU communication status is other than [Connected] (**[See]** Page 31)
- The [Logging mode] is selected (**[See]** Page 31)
- The editing data does not match the ECU map point data (**[See]** Page 91)

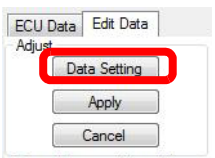
**(Reference)** If the map point data does not match, the data is sent but the cell color changes to red.




### ■Entering the Setting data temporarily

Click [Data Setting] to send the Settings data to the ECU.

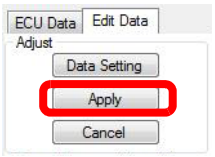
When the motorcycle's electric power is turned Off, this Setting data is cleared from the ECU.




### ■Entering the Setting data permanently

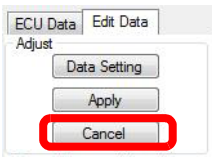
Click [Apply] to send the Settings data to the ECU.

The Setting data is memorised in the ECU even when the motorcycle's electric power is turned Off.




### ■Returning to the previous Setting data

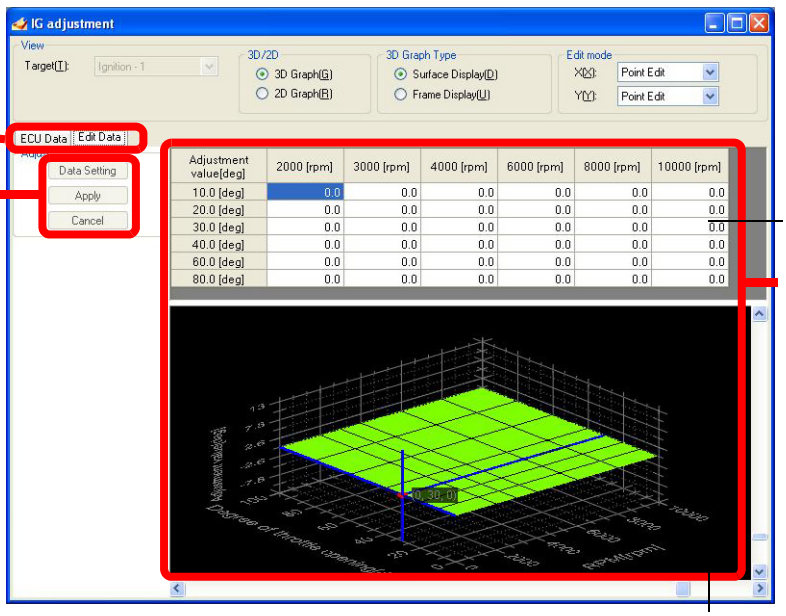
To return to the previous permanent setting from the temporary one, just click [Cancel].



# 5-4 Changing ignition timing data

From the [IG Adjustment] window, you can adjust the engine speed and ignition timing (Degrees) for each area of throttle position.

From the menu, select [View] -[IG Adjustment] ( /F2 key), and the [IG Adjustment] window is opened.




**Step 1: Select data to display**
You can switch the data to be shown on the map sheet and graph window.

[Edit Data] tab: Displays the current editing data.
[ECU Data] tab: Displays the current Setting data of the ECU.

**[See]** Page 77

**Step 2: Adjust the Setting map data in the graph window**
You can edit the current settings on the map sheet or in the graph window. Any change to the map sheet is also applied to the graph window, and vice versa.

**[See]**
To edit the map sheet: Page 78
To edit the graph window: Page 80

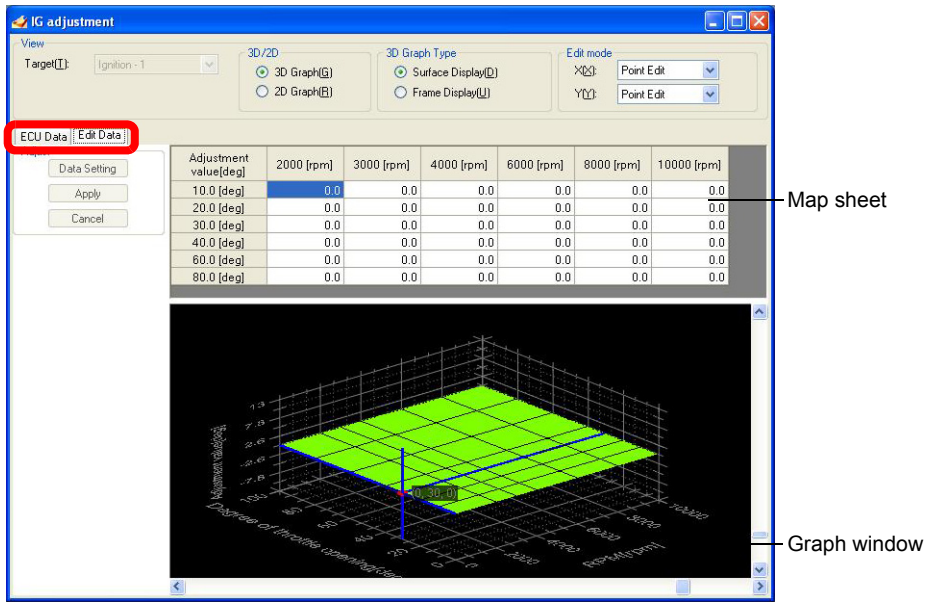
**Step 3: Sending Setting data from PC to ECU.**
Send the Setting data from the PC to the ECU.
[Data Setting]: Sends the Setting data to the ECU.
If the motorcycle's electric power is turned OFF, this data becomes invalid and the previous Setting data is made valid.

[Apply]: Sends the current Setting data to the ECU.
The data is applied even if the MC electric power is turned OFF.
[Cancel]: Makes the Settings data sent by the [Data Setting] invalid, and the Settings data with full throttle position is made valid.

**[See]** Page 85

## Step 1: Select data to display

You can switch between the map sheet and graph window for data display by clicking the [Edit Data] and [ECU Data] tabs.




### ■[Edit Data] tab

Displays the currently editing data.

### ■[ECU Data] tab

Displays the current Setting data of the ECU. It displays numerical data only. You cannot edit or send data.

**NOTE**

❍ *If the PC is disconnected from the ECU or if the ECU power supply is turned Off, "OFFLINE" is shown in the map sheet cell.*

| Adjustment value [%] | 0 [rpm] | 0 [rpm] | 0 [rpm] | 0 [rpm] | 0 [rpm] | 0 [rpm] |
|---|---|---|---|---|---|---|
| 0 [deg] | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE |
| 0 [deg] | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE |
| 0 [deg] | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE |
| 0 [deg] | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE |
| 0 [deg] | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE |
| 0 [deg] | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE | OFFLINE |

# Step 2: Adjust the Setting map data in the graph window

You can edit the current settings on the map sheet or in the graph window.
Any change to the map sheet is also applied to the graph window, and vice versa.

**NOTE**

- *Although a value between ±12 (degrees) can be entered, the ECU adjustment range is limited. A value which exceeds this limit will default to the maximum or minimum available from the ECU.*
- *ECU adjustment range*
  *KX250F and KX450F: Between -10 deg. and +3 deg.*

## ■Adjusting a value on the map sheet

The map sheet displays the ECU data or editing data that you have selected.

| Adjustment value[deg] | 2000 [rpm] | 3000 [rpm] | 4000 [rpm] | 6000 [rpm] | 8000 [rpm] | 10000 [rpm] |
|---|---|---|---|---|---|---|
| 10.0 [deg] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20.0 [deg] | 0.0 | +0.9 | +1.2 | +1.4 | +0.7 | 0.0 |
| 30.0 [deg] | 0.0 | +1.8 | +10.3 | +2.9 | +1.4 | 0.0 |
| 40.0 [deg] | 0.0 | +2.8 | +3.0 | +2.1 | +2.2 | 0.0 |
| 60.0 [deg] | 0.0 | +2.7 | +2.2 | +1.6 | +1.8 | 0.0 |
| 80.0 [deg] | 0.0 | 0.0 | 0.0 | -0.8 | 0.0 | 0.0 |

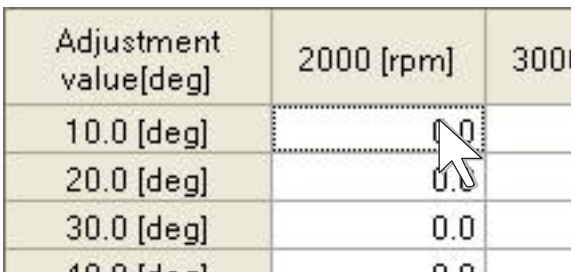
The map sheet has the following background colors.

| Color | Display data |
|---|---|
| **White** | Unadjusted values are shown in white. |
| **Yellow** | Adjusted values are shown in yellow. |
| **Red** | Any adjusted values which exceed the ECU setting range are shown in red. |
| **Aqua** | Fine-tuned values being set in the ECU are shown in aqua. |

**(Reference)** If you save these values during editing, they are determined. All of them are shown in white.

**1** Double-click the cell that you wish to edit.

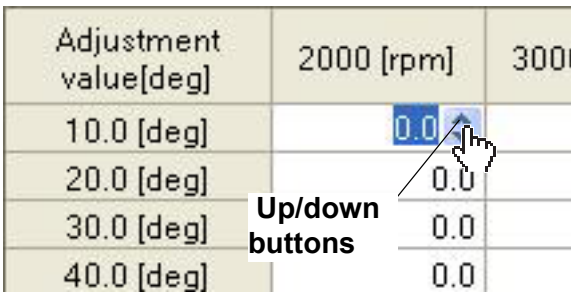
The up/down buttons appear at the right of the cell.



## 2 Entering an adjustment value.

Either click on the Up or Down arrow with the mouse, use the keyboard Up or Down arrows, or simply type in the value.

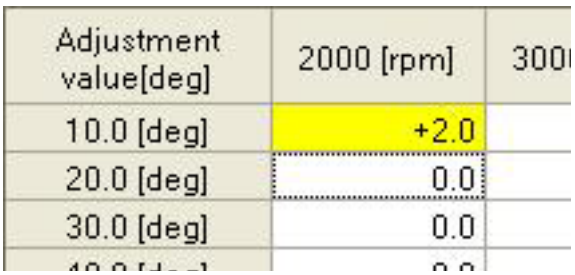
To cancel the current setting, just press the [ESC] key on the keyboard.




## 3 Press the [Enter] key on the keyboard.

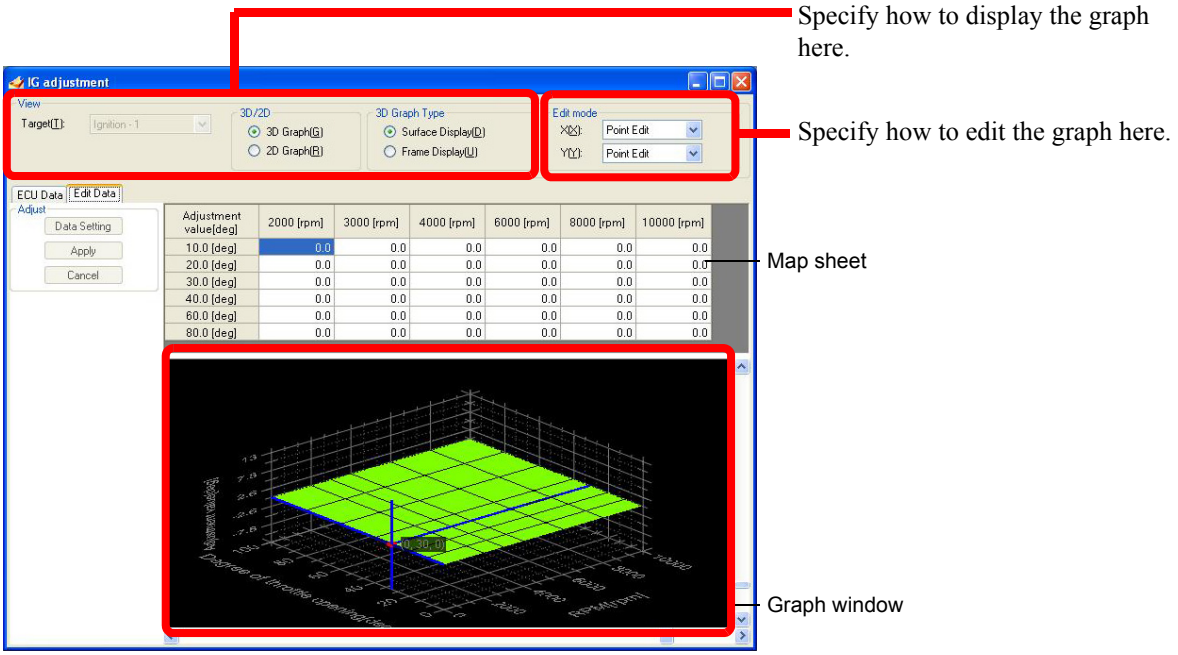
Once an adjustment value is entered the cell color changes to yellow.

Also, the current value is entered automatically when you click another cell.



## ■Adjusting a value in the graph window

The values you have adjusted on the map sheet are converted into graph data, and its graph is displayed in the “graph window”.



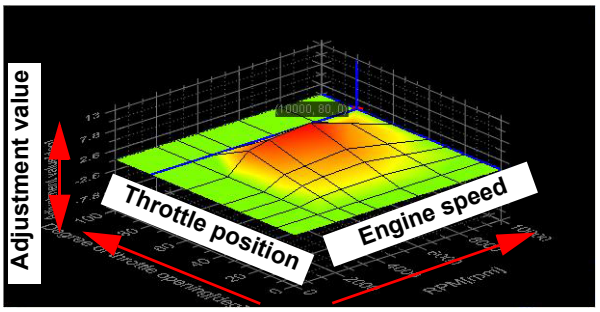
## Specifying how to display the graph

Click [3D Graph] or [2D Graph] of the [3D/2D] to select the 3 or 2-dimensional display. When you use the [3D Graph], select [Surface Display] or [Frame Display] of the [3D Graph Type] to select the display type.

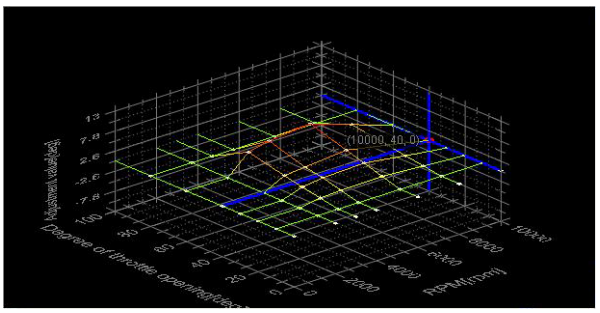
### [3D Graph]

Engine speed is displayed on the X-axis, throttle position on the Y-axis and adjustment values on the Z-axis.

#### Surface Display



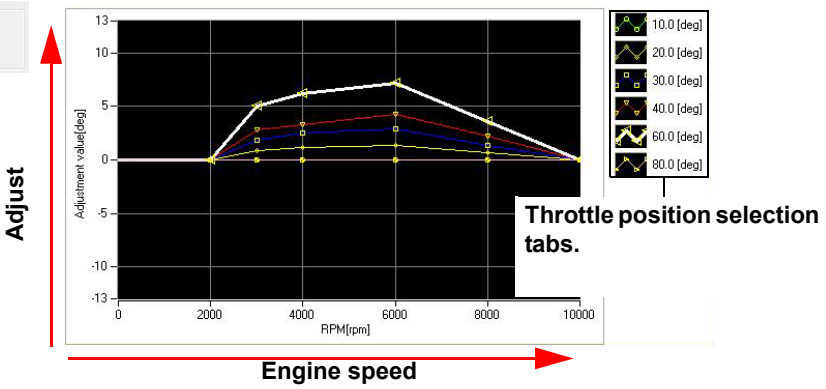

#### Frame Display



### [2D Graph]

Engine speed is displayed on the X-axis according to throttle position, with the adjustment values displayed on the Z-axis.

#### Surface Display



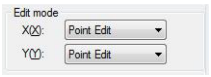
## Editing on the graph

When you drag the point where the graph window lines cross, you can adjust the value. Also, you can change the editing method.

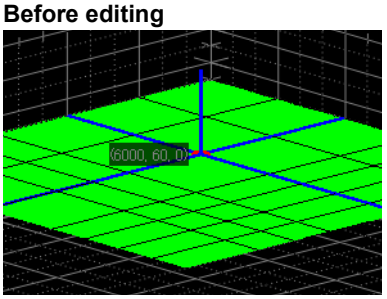
The following explains how to edit the graph if you select [3D Graph] and [Surface Display].

**[Point Edit]**
You can adjust values of the selected point only.

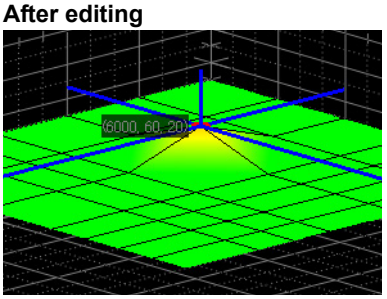
**Point Edit (on the X- and Y-axes)**




**Before editing**

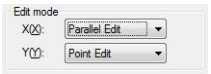



**After editing**

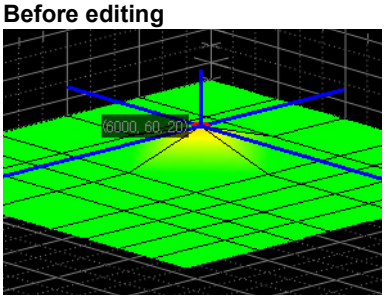



**[Parallel Edit]**
You can move the entire axis position of the selecting data in the window. The “editing on the Y-axis only” is the same as the “editing on the X-axis only”.

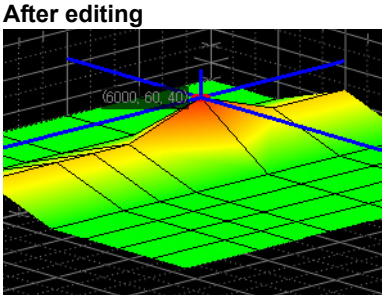
**Parallel Edit (on the X-axis only)**




**Before editing**

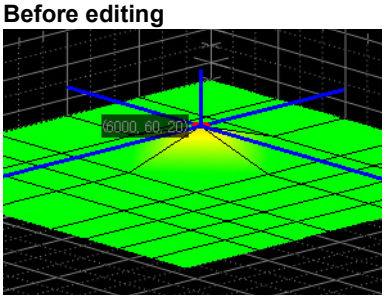



**After editing**

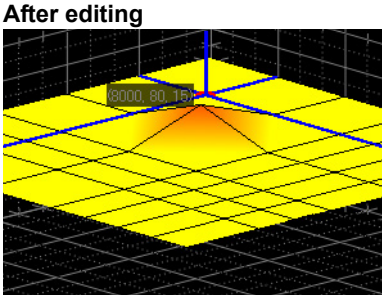



**Parallel Edit (on the X- and Y-axes)**

**Before editing**

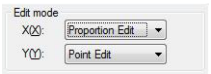



**After editing**

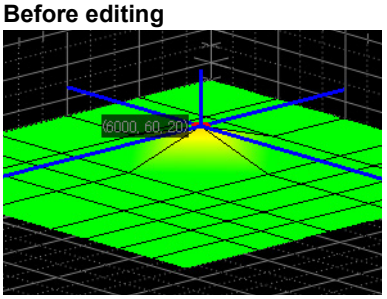


**[Proportion Edit]**
You can proportionally move the entire axis position of the selecting data in the window. The “editing on the Y-axis only” is the same as the “editing on the X-axis only”.

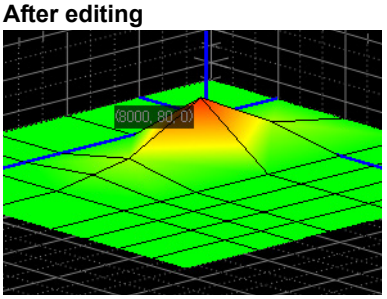
**Proportion Edit (on the X-axis only)**



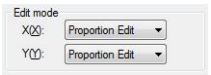

**Before editing**



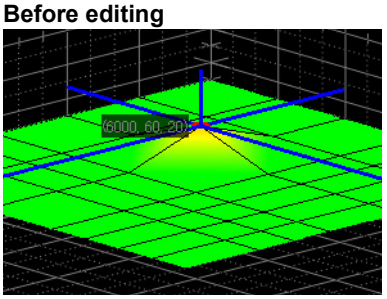

**After editing**



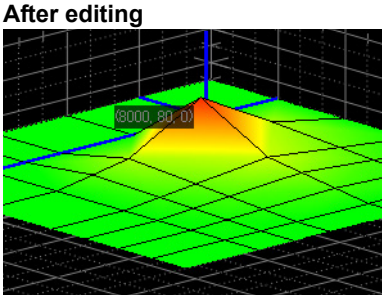

**Proportion Edit (on the X- and Y-axes)**




**Before editing**



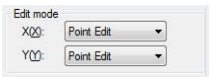

**After editing**



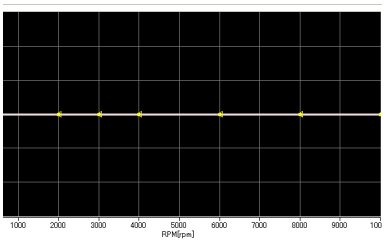

The following explains how to edit the graph if you select [2D Graph].
When you display the 2D graph, you can select the throttle position options to edit the throttle position graph.

**[Point Edit]**
You can adjust values of the selected point only.

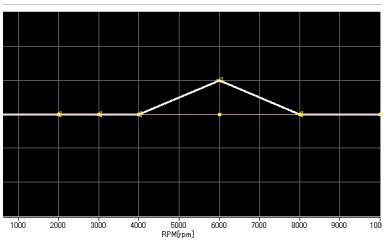
**Point Edit (on the X- and Y-axes)**




**Before editing**



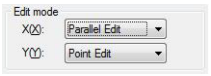

**After editing**



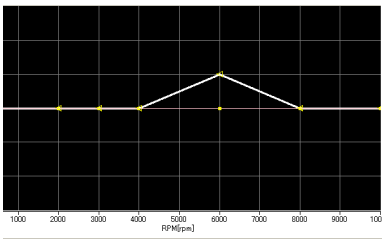
### [Parallel Edit]

You can move the entire axis position of the selecting data in the window. The “editing on the Y-axis only” is the same as the “editing on the X-axis only”.

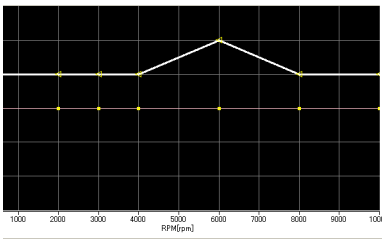
#### Parallel Edit (on the X-axis only)




**Before editing**

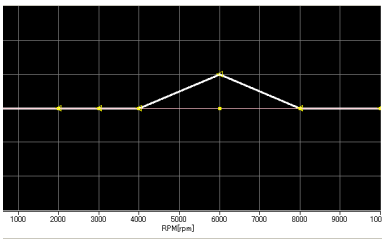



**After editing**

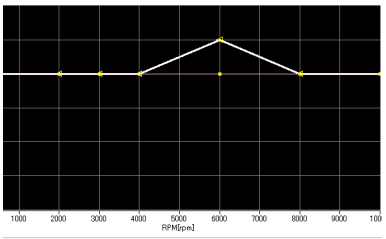



#### Parallel Edit (on the X- and Y-axes)

**Before editing**



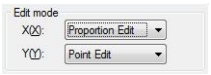

**After editing**



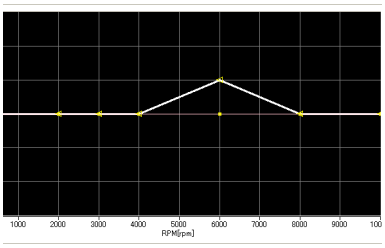

### [Proportion Edit]

You can proportionally move the entire axis position of the selecting data in the window. The “editing on the Y-axis only” is the same as the “editing on the X-axis only”.

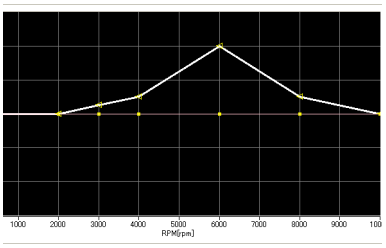
#### Proportion Edit (on the X-axis only)



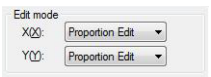

**Before editing**



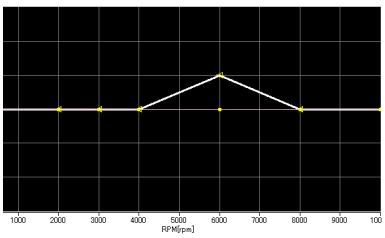

**After editing**



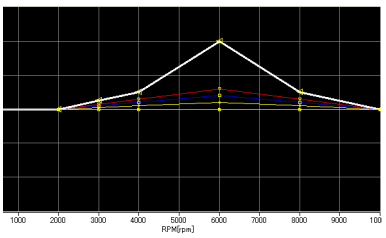

#### Proportion Edit (on the X- and Y-axes)




**Before editing**




**After editing**



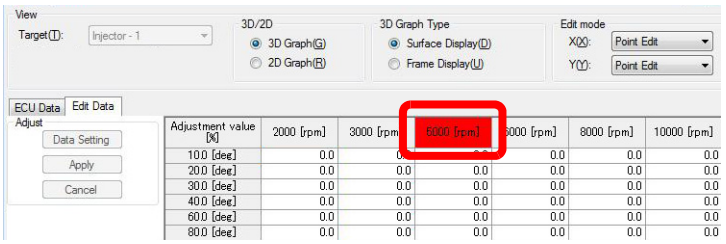
## Step 3: Sending Setting data from PC to ECU.

There are two methods of transferring data to the ECU. Select [Data Setting] to store data in the ECU until it powers down or [Apply] for permanent storage.

You cannot send the data if:

- If the vehicle information of the setting data, the vehicle information of the ECU controller, and the actual vehicle model do not match with each other
- The [ECU Data] is selected (**[See]** Page 77)
- If the ECU communication status is other than [Connected] (**[See]** Page 31)
- The [Logging mode] is selected (**[See]** Page 31)
- The editing data does not match the ECU map point data (**[See]** Page 91)

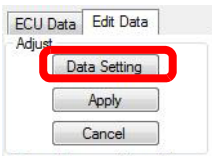
**(Reference)** If the map point data does not match, the data is sent but the cell color changes to red.




### ■Entering the Setting data temporarily

Click [Data Setting] to send the Settings data to the ECU.

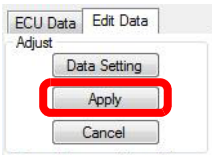
When the KX450F's electric power is turned Off, this Setting data is cleared from the ECU.




### ■Entering the Setting data permanently

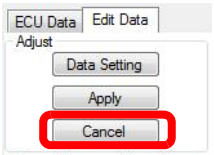
Click [Apply] to send the Settings data to the ECU.

The Setting data is memorised in the ECU even when the KX450F's electric power is turned Off.




### ■Returning to the previous Setting data

To return to the previous permanent setting from the temporary one, just click [Cancel].



# 5-5 Saving the Setting data

You can save the Settings data you have adjusted in the [FI Adjustment] and [IG Adjustment] windows in a file. Also, you can read the Setting data from the ECU and save it in a file.

## Saving the Setting data you have adjusted

From the Start menu, select [File] - [Save As] - [Setting Data File].

When the [Save As] window appears, select a folder and enter the file name for data storage.

**(Reference)** Once the values have been saved the cells change to white.

> **(POINT)** Naming a file
>
> Name a simple and unique file.
> If the file name has the date, purpose and owner information, you will be able to easily remember the file contents.
> An example of "090505-RainTest-Smith.KSD" shows that this file was created by Mr. Smith for the rain test on May 5th, 2009.
>
> The similarly files can be identified by adding characters ("b" and "c") after the date.
> "090505b-RainTest-Smith.KSD"

## Saving the ECU data

From the Start menu, select [File] - [Save As] - [ECU Data].

When the [Save As] window appears, select a folder and enter the file name for data storage.

## Saving the Settings data by overwriting

From the Start menu, select [File] - [Save] - [Setting Data File].

The existing Settings data file is overwritten by the current Settings data.

**(Reference)** Now, the adjusting value shown in yellow on the map sheet is changed into white.

# 5-6 Advanced operations

The following introduces the advanced operations which are useful for MC calibration.

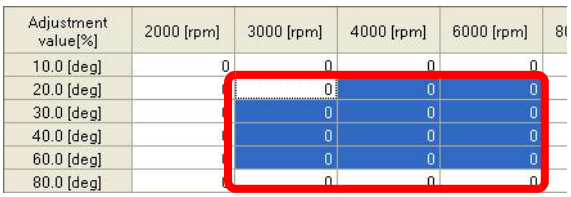
## Adjusting multiple values simultaneously

You can select multiple values on the map sheet and adjust them all at the same time.

### 1 Select multiple cells.

Drag the cursor across the map sheet to select multiple cells.

**(Reference)** You can also hold down the [Shift] key and press the arrow key.

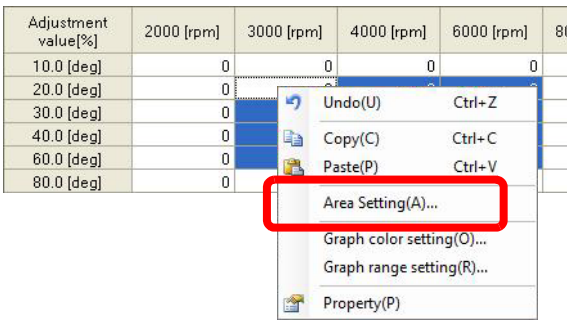



### 2 Choose [Area Setting].

Right-click on the map sheet to open the shortcut menu, and choose [Area Setting].

**(Reference)** This is the same when you select [Map] - [Area Setting].

The [Area Setting] window opens.

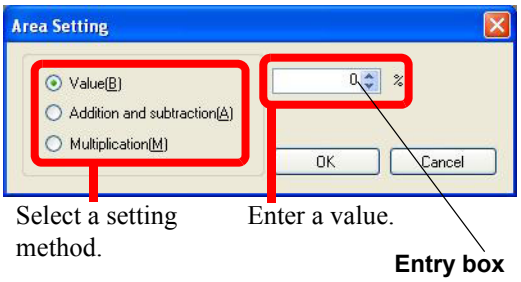


## 3 Enter a value.

Select a setting method and enter a value.

**(Reference)** Enter a value in any of the following 3 ways:

- •Use the numeric keypad.
- •Click the up/down button using the mouse.
- •Use the up/down arrow key of the keyboard.




The following explains the setting methods.

| Item | Explanation |
|---|---|
| **Value** | A value to be entered in the selected area settings. |
| **Addition and subtraction** | A positive value is added and a negative value is subtracted from the selected area settings.<br>If you enter value "-3", all values are subtracted by 3. |
| **Multiplication** | Selected area settings will be multiplied by the value entered.<br>If you enter value "1.05", all values are multiplied by 1.05.<br>Allowable entry is 0.00 to 10.00. |

## 4 Value adjustment confirmation.

Click [OK].

Adjusted values are displayed.

**NOTE**

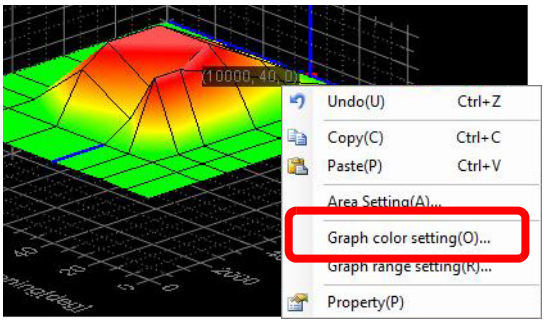
❍ *If the calculation result exceeds the ECU limited range, the upper or lower limit value is set.*

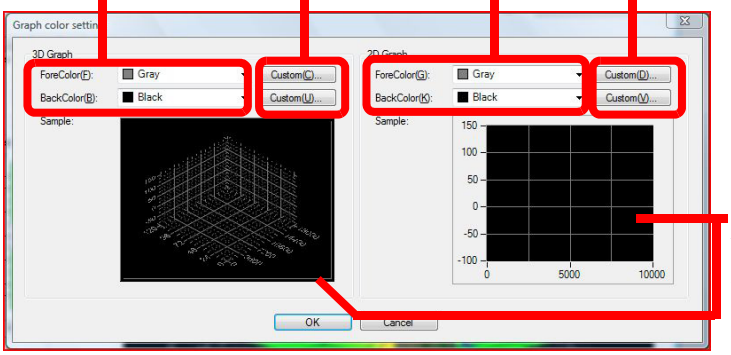
# Changing the graph color settings

From the menu, select [Map] - [Graph color setting], and the [Graph color setting] window is opened. You can set the foreground and background colors of 3D and 2D graphs. You must set the [FI Adjustment] and [IG Adjustment] windows separately.

When finished, click [OK] to enter your changes.

**(Reference)** Alternatively, right-click on the graph and select [Graph color setting] from the shortcut menu.




**Color selection list**
Select a color from the list.

ForeColor: Used for the character and line display.
BackColor: Used for the window background display.

**[Custom] button**
Creates a color that is not listed.

**Sample**
When you change the setting, its sample is displayed.

## Changing the graph range settings

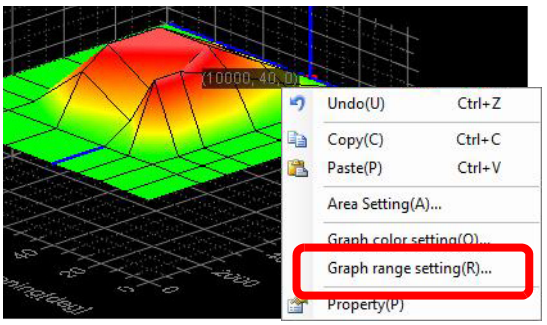
From the menu, select [Map]-[Graph range setting], and the [Graph range setting] window is opened.

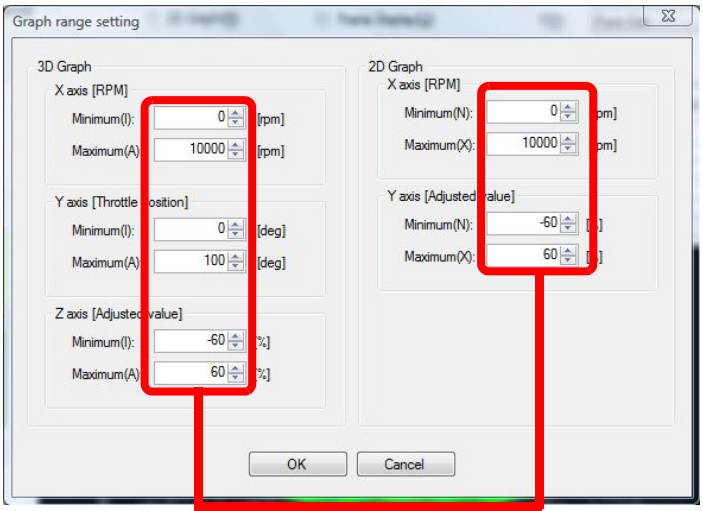
You can set the display area of 2D and 3D graphs.

You must set the [FI Adjustment] and [IG Adjustment] windows separately.

When finished, click [OK] to enter your changes.

**(Reference)** Alternatively, right-click on the graph and select [Graph range setting] from the shortcut menu.




**Entry box**

Enter the maximum and minimum values of each axis.
The following gives the limits of each axis.

| Axis | Minimum | Maximum |
|---|---|---|
| **3D X axis [RPM]** | 0 | 18000 |
| **3D Y axis [Throttle position]** | 0 | 120 |
| **3D Z axis [Adjusted value]** | -200 | 200 |
| **2D X axis [RPM]** | 0 | 18000 |
| **2D Y axis [Adjusted value]** | -200 | 200 |

## Changing the separator position (map point) between engine speed and throttle position

From the menu, select [View] - [Map Point Setting] or press the F3 key, and the [Map Point Setting] window is opened.

Change the separator position (map point) between the engine speed and throttle position.

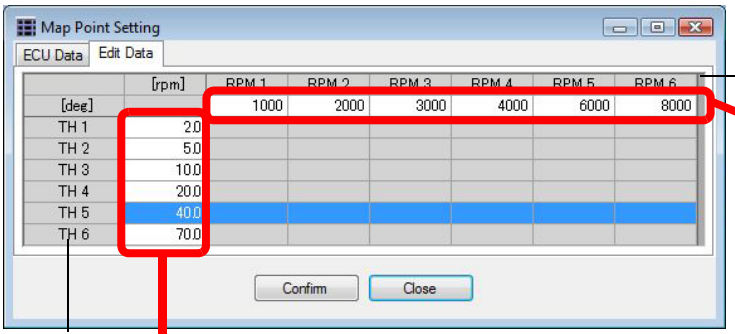
The map point setting is common for [FI adjustment] and [IG adjustment].

**NOTE**

❍ *Stop the engine before sending the map point data to the ECU.*

### 1 Set the map point.

Enter the engine speed and throttle position values, and set the map point.




**Item name**

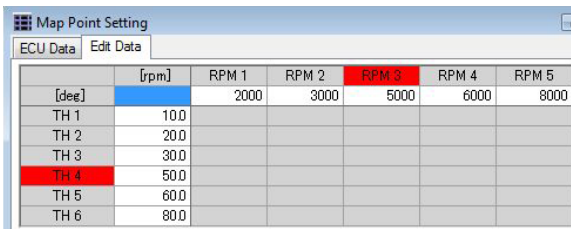
**Engine speed**
Entry range: 1 to 18000

**Item name**

**Throttle position**
Entry range: 0.1 to 120.0

**NOTE**

❍ *If any current setting does not match the ECU map point data, the background color of its item name is changed to red.*



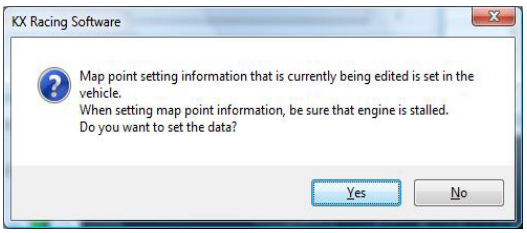
## 2 Send the map point data from the PC to the ECU.

Click [Confirm] to send the map point data to the ECU.
The transmission confirmation message is shown.

**NOTE**

❍ *You cannot send the data if:*
- *The ECU status is not connected.*
- *The data logging mode is selected.*

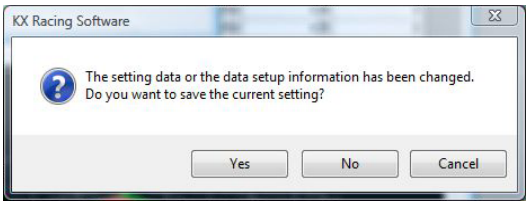
**(Reference)** When you click [Close], you are prompted to save the data.


KX Racing Software
Map point setting information that is currently being edited is set in the vehicle.
When setting map point information, be sure that engine is stalled.
Do you want to set the data?
Yes
No

If you select [Yes], the map point data is reflected on the map sheet but not sent to the ECU. In this case, the map point settings of the current edit data do not match and you cannot send the fuel injection and ignition timing data to the ECU.
We recommend you select [No] to discard the map point data you have changed, or click [Cancel] to return to the [Map Point Setting] window.

## 3 Make sure that engine is stopped, and click [Yes].

The map point data is sent to the ECU and it is reflected on the map sheet.


KX Racing Software
The setting data or the data setup information has been changed.
Do you want to save the current setting?
Yes
No
Cancel

## Sending the FI and Ignition timing values to the ECU simultaneously

### 1 Open the [FI Adjustment] and [IG Adjustment] windows.

Open the [FI Adjustment] (**[See]** Page 65) and [IG Adjustment] windows (**[See]** Page 76).

**NOTE**

❍ *If you open only one of them, the data of the opened window is only sent.*

### 2 Select [Multiple Function Setting].

From the menu, select [Configuration] - [Multi Function Setting].

**NOTE**

❍ *The Setting data that has been sent to the ECU is not cleared even if the ECU power supply is turned Off.*

## Returning the ECU to the factory defaults

You can return all data including fuel injection value, ignition timing value, and map point settings to the factory defaults.

From the menu, select [Configuration] - [Reset ECU] or press the F6 key.

.

**NOTE**

❍ *The KX450F 2012 model has three (3) types of DFI Setting Data as factory default: Soft Track, Hard Track, and Standard Track. If you select the [Reset ECU] while "Soft Track" or "Hard Track" is selected, the DFI setting data becomes the "Standard Track" (all adjusting values are cleared to zero).*
*To return to the factory defaults, use the data sample ("Hard Riding Surface-En.ksd" or "Soft Riding Surface-En.ksd") stored on the CD-ROM disk. ([See] Page 61)*

# 6 Displaying the Engine Status

You can monitor engine operation by displaying its status when you are connected to the ECU. You can select [Data Monitor] to display numerical data only, or [Data Meter] to select a display option.

## 6-1 Opening the [Data Monitor] window

You can display the numerical data of engine status when the PC is connected to the ECU.

From the menu, select [View] - [Data Monitor] or press the F7 key, and the [Data Monitor] window is opened.

**(Reference)**
- You can select display options from the [Data Selection] window. When you double-click in the [Data Monitor] window, the [Data Selection] window is shown. (**[See]** Page 97)
- You can change the background color and character colors in the window. (**[See]** Page 103)

**Data name**
Displays the name of data already set.

**The values obtained**
The obtained values are displayed.
If the PC is disconnected from the ECU, “OFFLINE” is shown.
If communication with the ECU has not been established, “UNSETING” is shown.

**Unit**
Displays the unit.

**(Reference)** The [MAP No.] is displayed for the KX450F 2012 model only.

# 6-2 Opening the [Data Meter] window

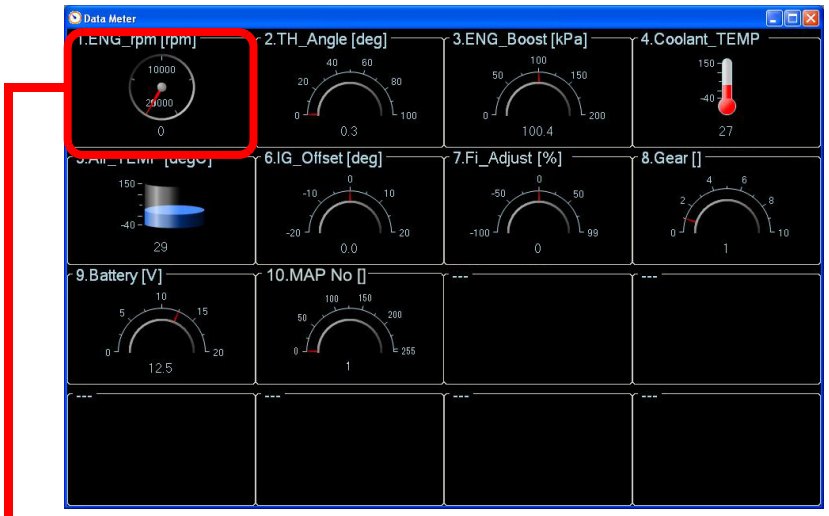
You can monitor engine operation by displaying its status when you are connected to the ECU. You can select various displays.

From the menu, select [View] - [Data Meter] or press the F8 key, and the [Data Meter] window is opened.

**NOTE**

❍ *If you select many items to be displayed, the refresh rate drops.*

**(Reference)**
- You can select display options and the Data type from the [Data Selection] window. When you double-click the [Data Meter] window, the [Data Selection] window is shown. (**[See]** Page 97)
- You can change the background color and character colors. (**[See]** Page 103)



**Data name**
Displays the name of data already set.

**Unit**
Displays the unit.

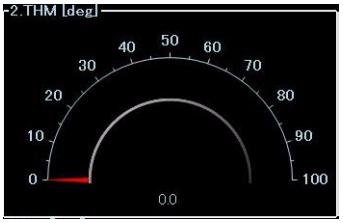
**Meter display**
The obtained values are displayed on each meter.
You can select the display meter type from the [Data Selection] window. (**[See]** Page 97)

**The values obtained**
The obtained values are displayed.
If the PC is disconnected from the ECU, “OFFLINE” is shown.
If communication with the ECU has not been established, “UNSETING” is shown.

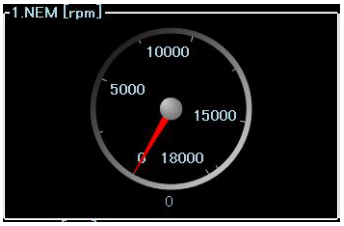
**(Reference)** The [MAP No.] is displayed for the KX450F 2012 model only.

## Data meter types

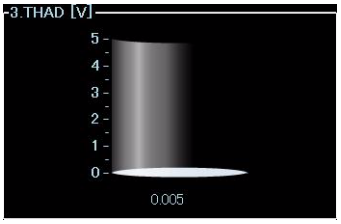
**Meter**



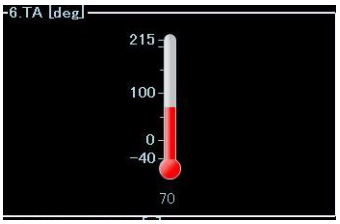

**Gauge**



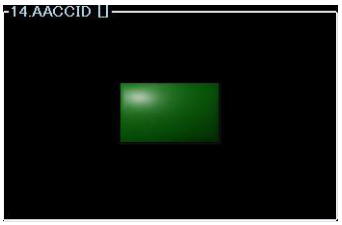

**Bar**




**Thermometer**




**Indicator**



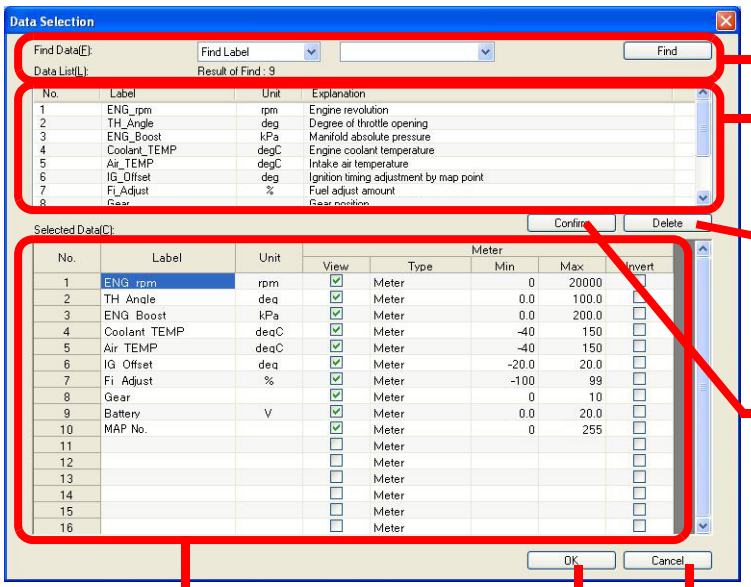
# 6-3 Changing the display items

You can change the display items in the [Data Monitor] and [Data Meter] windows.

From the menu, select [Monitor] - [Data Selection] or press the F10 key, and the [Data Selection] window is opened.

[The items (label) that can be set in [Data Selection] are the same as those in the [Data Monitor], [Data Meter], and for data recording.

**(Reference)** Also, when you double-click in [Data Monitor] or [Data Meter], the [Data Selection] is opened.


Data Selection
Find Data(F):
Find Label
Find
Data List(L):
Result of Find : 9
No. Label Unit Explanation
1 ENG_rpm rpm Engine revolution
2 TH_Angle deg Degree of throttle opening
3 ENG_Boost kPa Manifold absolute pressure
4 Coolant_TEMP degC Engine coolant temperature
5 Air_TEMP degC Intake air temperature
6 IG_Offset deg Ignition timing adjustment by map point
7 Fi_Adjust % Fuel adjust amount
8 Gear Gear position
Selected Data(C):
Confirm
Delete
No. Label Unit Meter
View Type Min Max Invert
1 ENG_rpm rpm Meter 0 20000
2 TH_Angle deg Meter 0.0 100.0
3 ENG_Boost kPa Meter 0.0 200.0
4 Coolant_TEMP degC Meter -40 150
5 Air_TEMP degC Meter -40 150
6 IG_Offset deg Meter -20.0 20.0
7 Fi_Adjust % Meter -100 99
8 Gear Meter 0 10
9 Battery V Meter 0.0 20.0
10 MAP No. Meter 0 255
11 Meter
12 Meter
13 Meter
14 Meter
15 Meter
16 Meter
OK
Cancel

**Search for data.**
You can search for data being defined in the information file.

**[Data List]**
Lists the data that have been searched.

**[Delete] button**
Deletes a selected item from the [Selected Data] list.

**[Confirm] button**
Replaces the current item on the [Selected Data] list by the item selected from the [Data List].

**[Cancel] button**
Cancels the current selection, and closes the window.

**[OK] button**
Enters the current settings, and closes the window.

**[Selected Data] list**
Lists the currently selected items.
You can change the selections on the [Meters] list.

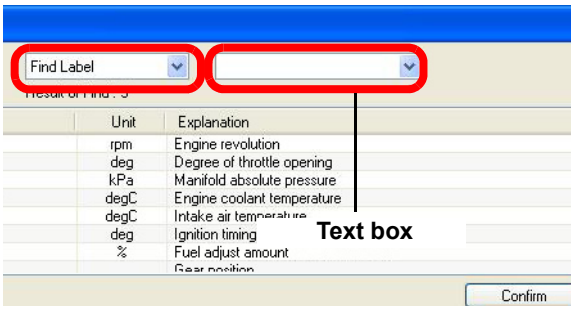
**(Reference)** The [MAP No.] is displayed for the KX450F 2012 model only.

## Searching for data items

The following explains how to search for data items.

### 1 Set the search conditions.

Select a search type, and enter a character string to search.

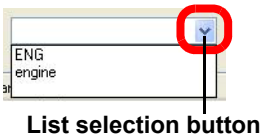



| Search type | Min |
|---|---|
| **Find Label** | Searches for a word in the label (item name). |
| **Find Explanation** | Searches for a word in the explanation columns. |
| **Find All** | Searches for a word in the label (item name) and the explanation columns. |

**NOTE**

❍ *Single-byte and two-byte characters are distinguished during search.*

**(Reference)** When you click the List Selection Button in the text box, the words that you searched for are listed. You can then select the desired word.

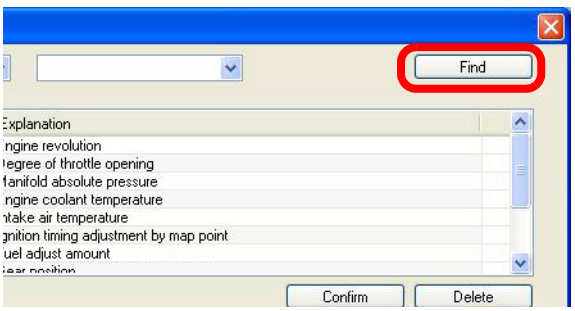



### 2 Search for data.

Click [Find].

The search result is displayed on the [Data List].

**(Reference)** If the text box is empty, all items will be displayed.



# Adding/changing/deleting data items

The following explains how to change, and/or delete data.

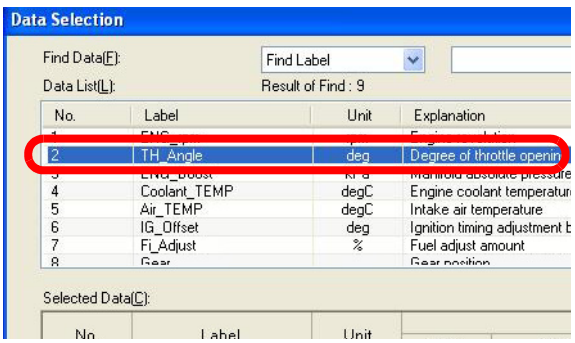
## ■Adding a data items

**1** Select an empty channel on the [Selected Data] list.

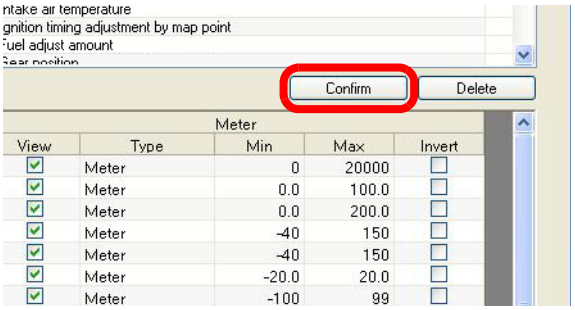
The selected item is surrounded by dotted lines.

**2** From the [Data List], click and select an item you wish to add.

The background of the selected item is shown in blue. Also, the background of the selected item of the [Selected Data] is changed to blue.


Data Selection
Find Data(F):
Find Label
Data List(L):
Result of Find : 9
No. Label Unit Explanation
2 TH_Angle deg Degree of throttle openin
4 Coolant_TEMP degC Engine coolant temperatur
5 Air_TEMP degC Intake air temperature
6 IG_Offset deg Ignition timing adjustment b
7 Fi_Adjust % Fuel adjust amount
Selected Data(C):
No. Label Unit

**3** Click [Confirm].




The item will be added.

The selection cursor shifts to the next item in the [Data List] and [Selected Data] sections.

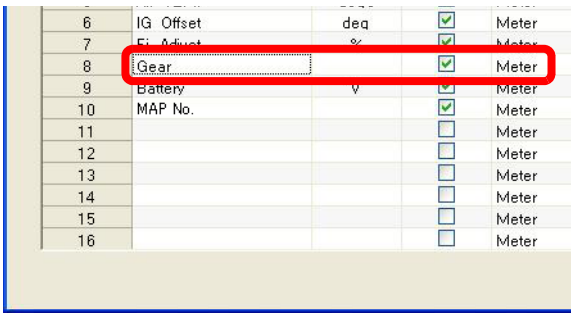
**(Reference)** When data is added, the selection shifts to the next item on the [Data List] and [Selected Data] sections. You can repeat this action by pressing the [Confirm] button.

**4** Click [OK].

## ■Changing a data item

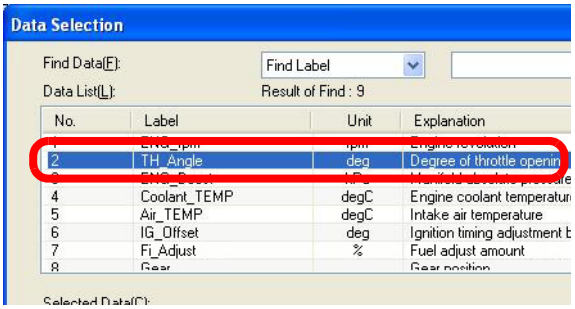
**1** Select a channel of the [Selected Data] you wish to edit.

The selected item is surrounded by dotted lines.

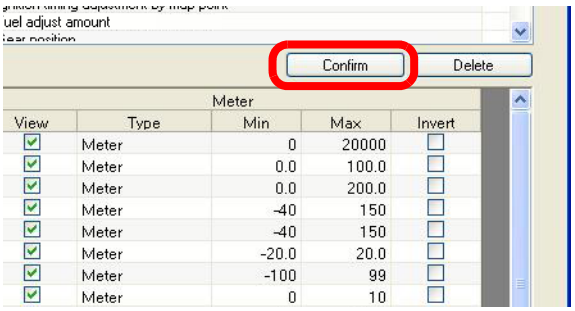



**2** From the [Data List], click and select an item you wish to edit.

The background of the selected item is shown in blue. Also, the background of the selected item of the [Selected Data] is changed to blue.


Data Selection
Find Data(F):
Find Label
Data List(L):
Result of Find : 9
No. Label Unit Explanation
2 TH_Angle deg Degree of throttle openin
4 Coolant_TEMP degC Engine coolant temperatur
5 Air_TEMP degC Intake air temperature
6 IG_Offset deg Ignition timing adjustment b
7 Fi_Adjust % Fuel adjust amount
Selected Data(C):

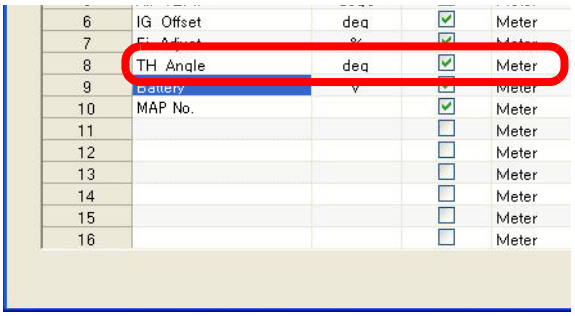
**3** Click [Confirm].




The item will be changed.

The selection cursor shifts to the next item in the [Data List] and [Selected Data] sections.

**(Reference)** When data is added, the selection shifts to the next item on the [Data List] and [Selected Data] sections. You can repeat this action by pressing the [Confirm] button.

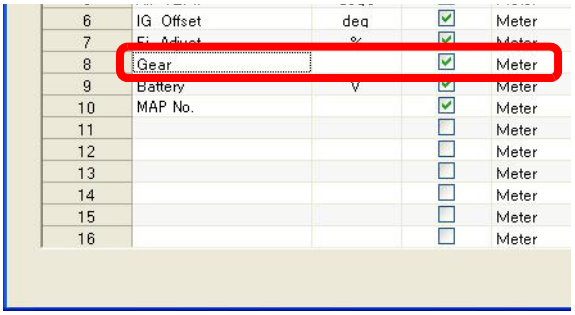



**4** Click [OK].

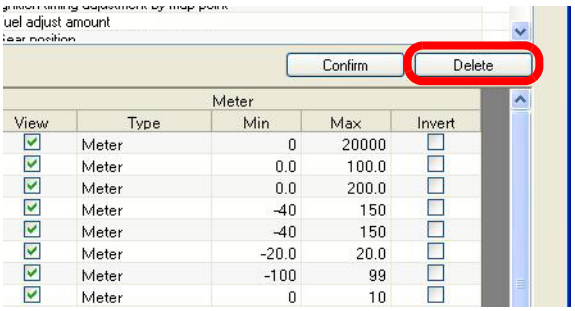
## ■Deleting a data item

**1** Select a channel of the [Selected Data] you wish to delete.

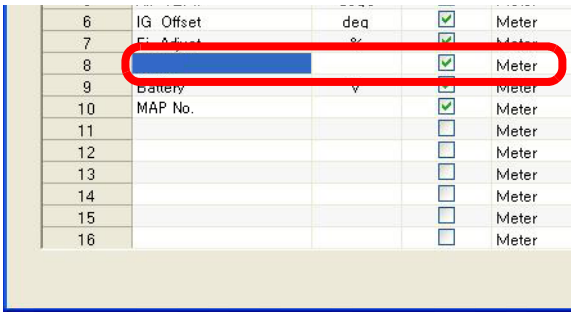
The selected item is surrounded by dotted lines.




**2** Click [Delete].

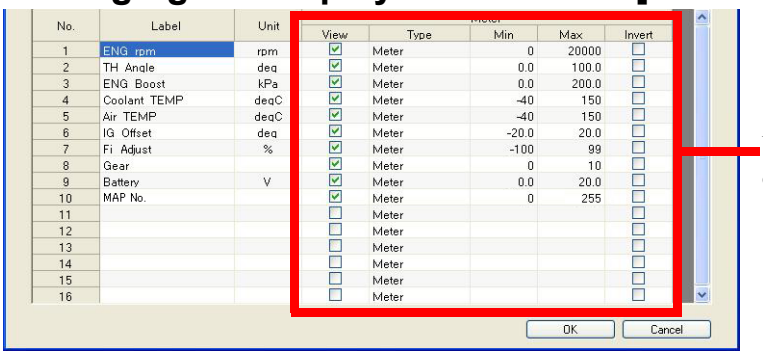



The item will be deleted.

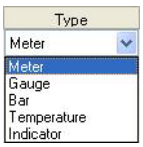



**3** Click [OK].

## ■Changing the display items on the [Data Meter]



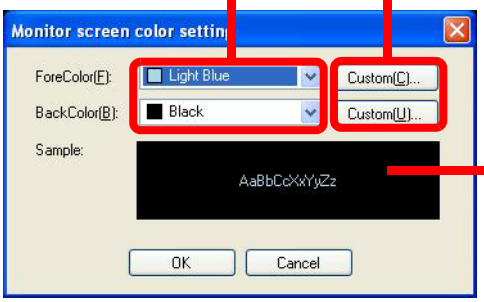

Use this area to set items to be displayed on the Data Meter.

| Item | Explanation |
|---|---|
| **View** | Display or hide the data meters.<br>• If box is checked: The data meters are displayed.<br>• If box is unchecked: The data meters are NOT displayed. However, the item names and units are shown. |
| **Type** | Select a meter type.<br>  |
| **Min** | Enter the minimum value for display. |
| **Max** | Enter the maximum value for display. |
| **Invert** | Convert the minimum and maximum value display positions.<br>**If unchecked**<br> <br>**If checked**<br> |

# 6-4 Changing the display colors

You can change the display color in the [Data Monitor] and [Data Meter] windows.

From the menu, select [Monitor] - [Color Setting], and the [Monitor screen color setting] is opened.




**Color selection list**
Select a color from the list.

ForeColor: Used for the character and line display.
BackColor: Used for the window background display.

**[Custom] button**
Creates a color that is not listed.

**Sample**
When you change the setting, its sample is displayed.

Riding data can only be recorded when the ECU controller is fitted to the motorcycle.

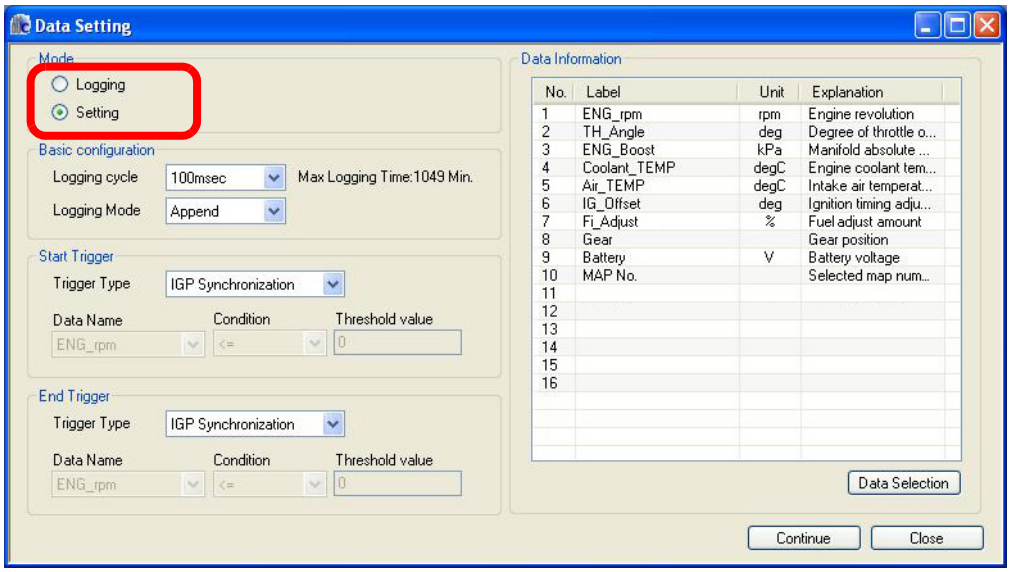
## 7-1 Selecting the [Logging] mode

To log the riding data, select the [Logging] mode.

From the menu, select [View] - [Data Setting] or press the F9 key, and the [Data Setting] window is opened.

You can check the current settings on the Status bar.

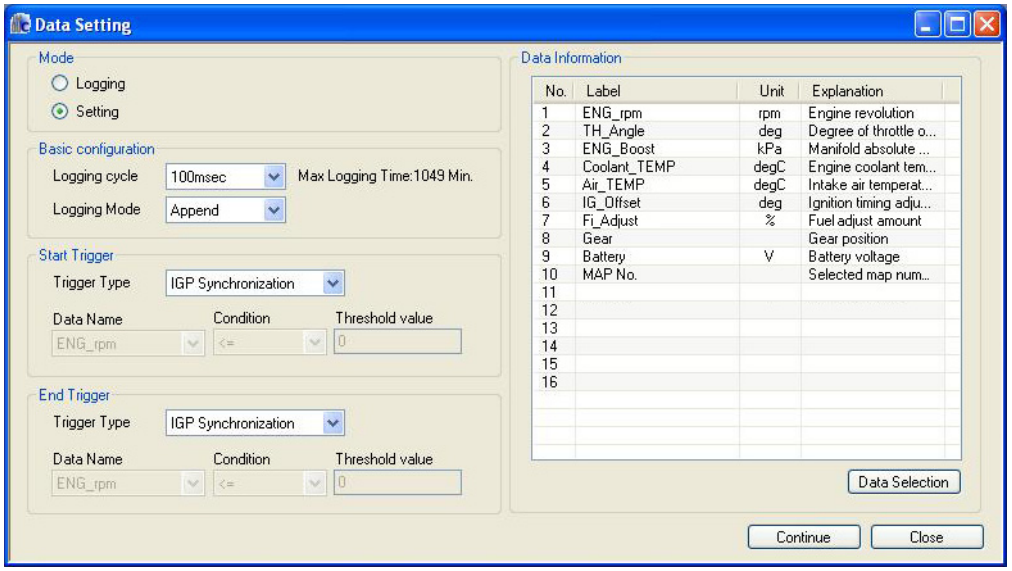
**[See]** " Status bar" (Page 31)




**(Reference)** The [MAP No.] is displayed for the KX450F 2012 model only.

# 7-2 Selecting a log mode

Set the parameters required to log the riding data.




**(Reference)** The [MAP No.] is displayed for the KX450F 2012 model only.

| Item | Explanation |
|---|---|
| **Mode** | To log the riding data, select the [Logging] mode. You can check the current settings on the Status bar.<br>**[See]** " Status bar" (Page 31)<br>• Logging: Logs the riding data.<br>• Setting: Sets the riding data. |
| **Basic configuration** | Sets the data logging cycle and the log mode. |
| **Logging cycle** | Set the logging rate as follows.<br>• 100 ms: Logs data every 1/10 second.<br>• 1 s: Logs data every 1 second. |
| **Logging Mode** | Sets the data logging mode.<br>• Clear: Logging will only occur once, between selected start and end triggers.<br>• Append: Logging will be continuous, between selected start and end triggers.<br>**NOTE**<br>❍ *The ECU controller will cease to record once its memory is full.* |
| **Start trigger** | Sets a trigger condition to start or restart logging. |

| Item | Explanation |
|---|---|
| **Trigger Type** | Sets a trigger condition type to start or restart logging.<br>• IGP Synchronization: When the ECU is powered up (engine running), logging starts or restarts.<br>• Set value: When the value set from [Data Information] is met, logging starts or restarts.<br>Set the [Data Name], [Condition], and [Threshold value]. For example, if you set the [Data Name] to "ENG_rpm", the [Condition] to "=>", and the [Threshold value] to "200", data logging starts or restarts when the "engine speed exceeds 200". |
| **End trigger** | Sets a trigger condition to end or temporarily stop logging. |
| **Trigger Type** | Sets a trigger condition type to end or temporarily stop logging.<br>• IGP Synchronization: When the ECU is powered down (engine turned OFF), logging ends or temporarily stops.<br>• Set value: When the value set from [Data Information] is met, logging ends or temporarily stops.<br>Set the [Data Name], [Condition], and [Threshold value]. For example, if you set the [Data Name] to "ENG_rpm", the [Condition] to "<=", and the [Trigger threshold] to "200", data logging ends or temporarily stops when the "engine speed drops below 200". |
| **Data Information** | Displays the information of the current data selection.<br>**(Reference)** When you double-click an item on the list, the item is selected and the [Data Selection] window is shown.<br>**[See]** "6-3 Changing the display items" (Page 97) |
| **[Data Setting] button** | Opens the [Data Selection] window. |

# 7-3 Saving the data and sending it to the ECU controller

Click [Continue] in the [Data Setting] window, and the current Settings data is saved and the logging conditions data is sent to the ECU controller.

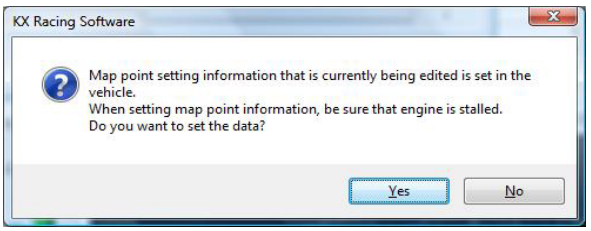
**NOTE**

❍ *This function is disabled if the vehicle information is not displayed on [ECU Controller] of the Status bar.*

# 7-4 Closing the [Data Setting] window

Click [Close] in the [Data Setting] window, and the [Data Setting] window is closed.

If the current settings have been changed, confirmation message is shown to the user.


KX Racing Software
Map point setting information that is currently being edited is set in the vehicle.
When setting map point information, be sure that engine is stalled.
Do you want to set the data?
Yes
No

- [Yes] button: Saves the current settings and closes the [Data Setting] window. The Settings data is NOT sent to the ECU controller.
- [No] button: Discards the current settings and closes the [Data Setting] window.
- [Cancel] button: Returns to the [Data Setting] window.

# 7-5 Logging the riding data

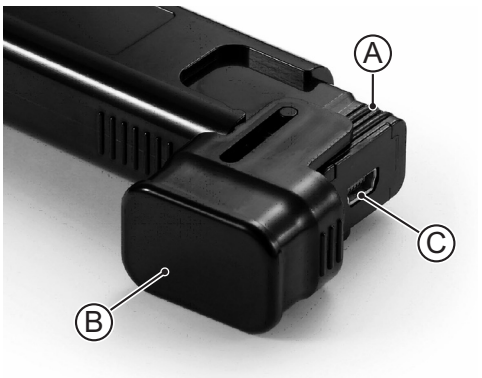
Log the riding data as follows.

**1** Disconnect the USB cable from the ECU controller, and close the ECU controller cover.

| *NOTICE* |
| --- |
| Do not leave the USB connector cover open when the USB cable is not connected. If the cover is left open, water and dust could enter the ECU controller, and the ECU controller could be damaged. |

**NOTE**

- *Before closing USB connector cover Ⓑ, check to see that O-ring Ⓐ is not contaminated with dust, sand or other objects. If contaminated, wipe the O-ring using a clean cloth.*
- *To facilitate smooth opening and closing of USB connector cover Ⓑ, apply a small amount of clean 4-stroke engine oil to O-ring Ⓐ. After applying the oil, wipe off excess oil using a clean cloth.*
- *Do not apply oil to USB connector Ⓒ itself.*




**2** Install the number plate.

**3** Ride the MC.

Logging starts with the preset start trigger conditions.

Logging ends with the preset end trigger conditions.

# 8 Analyzing the Riding Data

Get the riding data from the ECU controller, and display and analyze the riding data in the [Analyze] window.

## 8-1 Retrieve the riding data

Transfer the riding data from the ECU controller to a PC.

### 1 Connect the ECU controller to the PC.

Connect between the PC and ECU controller using the USB cable.

**[See]** “4-5 Connecting the ECU controller to the PC” (Page 58)

### 2 Download the riding data.

From the menu, select [File] - [Download Logging data] ( /F11 key).

Name the Logging data file and save it.

**(POINT)** Naming a file

Name a simple and unique file.
If the file name has the date, purpose and owner information, you will be able to easily remember the file contents.
An example of “090505-RainTest-Smith.ULD” shows that this file was created by Mr. Smith for the rain test in May 5th, 2009.

The similarly files can be identified by adding characters (“b” and “c”) after the date.
“090505b-RainTest-Smith.KSD”

## 8-2 Reading the Logging data file

Read the Logging data file.

From the menu, select [File] - [Open] - [Logging Data File], and the [Analyze] window is opened.

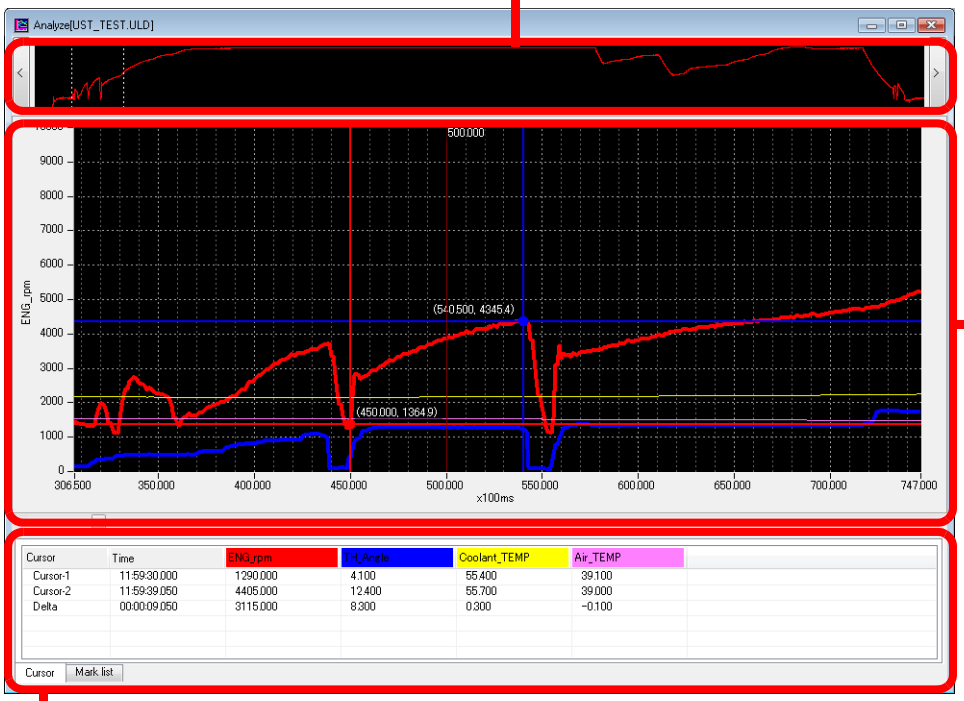
The Logging data file that you have opened is displayed as a graph.

# 8-3 Explanation and operations of the [Analyze] window

The following explains how to read and operate the [Analyze] window. This window consists of three (3) basic areas. The name of the current Logging data file is displayed in the title.

**Entire graph area**
The entire riding data is displayed in a single subwindow.
The part shown in the “Partial graph area” is displayed by dotted lines.
Only the items selected from the “Information area” are displayed.

**[See]** Page 111




**Partial graph area**
Partially displays the riding data.
Up to 16 lines of data can be displayed.

**[See]** Page 112

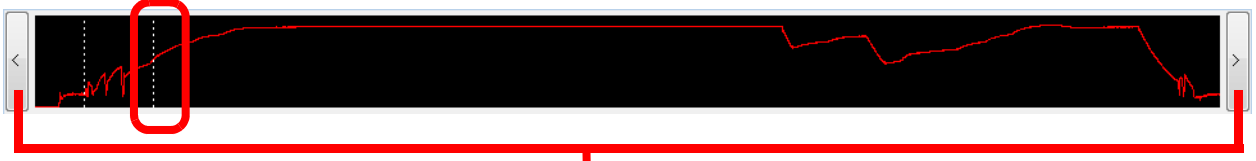
**Information area**
Displays line data relative to the position of Cursor 1 and Cursor 2. It also displays the mark positions (time) on the Mark tab.
You can click an item name on the colored header boxes to switch the graph in the Entire graph area and the unit increments on the side graph in the Partial graph area.

**[See]** Page 113

## Entire graph area

The entire riding data is displayed in a single subwindow. The part shown in the “Partial graph area” is displayed by dotted lines.

Only the graph of items selected from the “Information area” is displayed.



**Range selection bar**
You can drag this bar to move the display position within the “Partial graph area”.
You can also use the scroll buttons of the “Entire graph area” and the scroll bar at the bottom of “Partial graph area” to do the same operations.

**Scroll buttons of “Entire graph area”**
You can click these button to move the display position within the “Partial graph area”.
You can also use the “Range selection bar” and the scroll bar at the bottom of “Partial graph area” to do the same operations.

# Partial graph area

Partially displays the logged data. The time is displayed on the X-axis, and the scale of the selected item is displayed on the Y-axis. Select an item from the “Information area”.

Up to 16 lines of data can be displayed.

When you double-click any point within the graph, the [Display data information setting] window is opened.
**[See]** Page 116

**Scroll bar of “Partial graph area”**
When you click the right or left mouse button or drag the center bar, you can move the display position within the “Partial graph area”.

**Cursor 2 (Blue)**
Cursor 2 moves in the same way as cursor 1 and is a reference cursor to cursor 1. Cursor 2 also displays the line data at the point of intersection. However, cursor 2 cannot place a mark on the time line or place a comment. Referring to the Information area (page 113), the Delta data is the difference between the data positions of cursor 1 and cursor 2.

**Cursor 1 (Red)**
This is the main cursor in which you can place marks on the time line. It can also display a line’s data information. Drag the center of the crosshairs to move cursor. The line’s data at the point of intersection is displayed in the “Information area” (page 113). When you add a mark (page 114), a vertical line is added to the time line at the cursor’s position. A comment (page 118) can be assigned to the mark for future reference.

# Information area

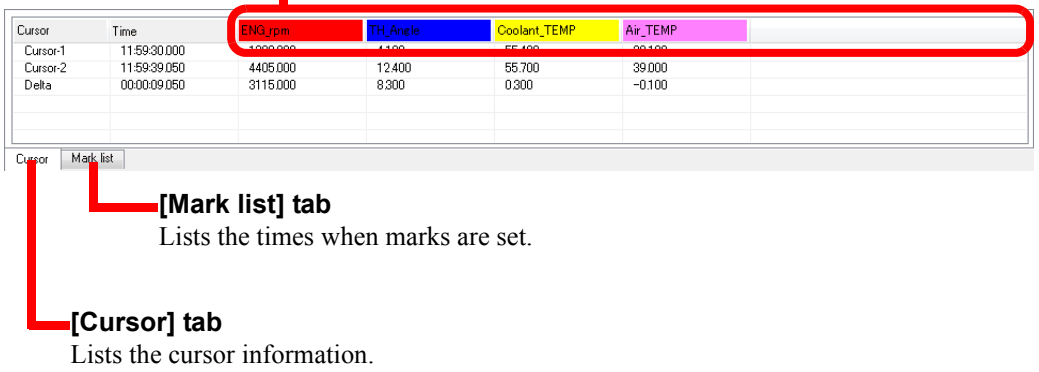
Displays data information about cursor 1 and cursor 2 positions. It also shows the time locations of marked positions.

You can click an item name on the colored header boxes to switch the graph in the Entire graph area and the unit increments on the side graph in the Partial graph area.

### Cursor information

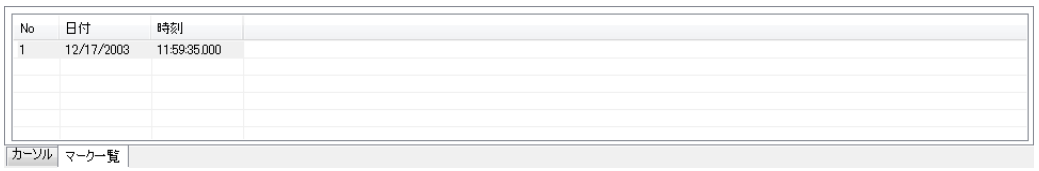
The cursor-1 and cursor-2 position data, and the difference between these cursors are listed.

- Cursor 1: Displays the item data at cursor 1.
- Cursor 2: Displays the item data at cursor 2.
- Delta: Displays a difference between cursor 1 and cursor 2.




### Mark list

Lists the times sequentially when marks are set.



# Advance operations

## ■Adding a mark

### 1 Select a time line to add a mark.

Select the time you wish to add by dragging cursor 1.

### 2 Add a mark.

From the menu, select [Analyze] - [Mark] - [Add].

**(Reference)** You can also add marks by selecting [Mark] - [Add] from the shortcut menu.

The time of the scale before cursor 1 is added to the marks list of the “Information area”.

## ■Deleting a mark.

### 1 Select a mark you wish to delete.

Click the mark on the list.

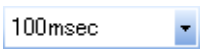
### 2 Delete the mark.

From the menu, select [Analyze] - [Mark] - [Delete].

**(Reference)** You can also delete marks by selecting [Mark] - [Delete] from the shortcut menu.

## ■Rescaling the vertical axis and time axis

You can rescale the vertical axis and time axis of the “Partial graph area”. You have the following selections.

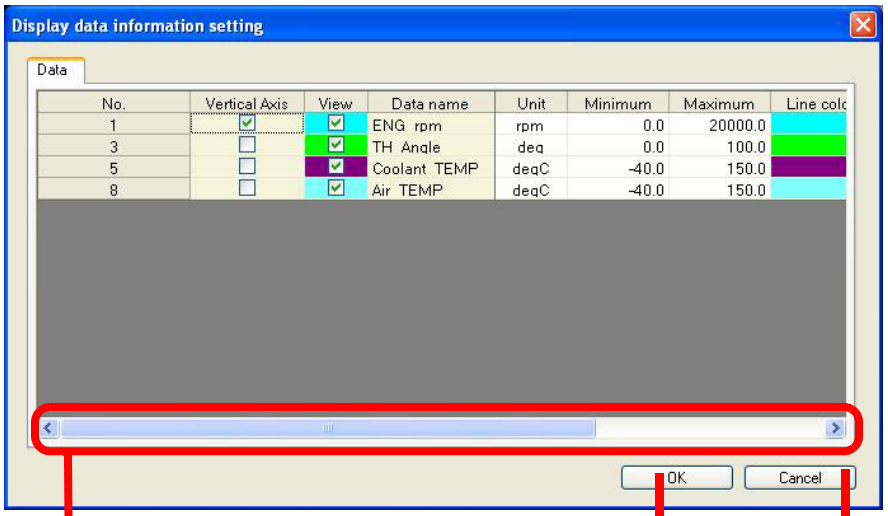
| Operation | Toolbar | Keyboard | Menu | Shortcut menu |
|---|---|---|---|---|
| **Scale Up the vertical axis** | | Press the Page Up key. | Select [Analyze] - [Spindle Extension]. | Select [Spindle Extension] from the shortcut menu. |
| **Scale Down vertical axis** | | Press the Page Down key. | Select [Analyze] - [Spindle Reduction]. | Select [Spindle Reduction] from the shortcut menu. |
| **Scale Up the time axis** | | Press the End key. | Select [Analyze] - [Axis Expansion Of Time]. | Select [Axis Expansion Of Time] from the shortcut menu. |
| **Scale Down the time axis** | | Press the Home key. | Select [Analyze]- [Axis Reduction Of Time]. | Select [Axis Reduction Of Time] from the shortcut menu. |
| **Select a time scale.** |  Select the desired scale of time from the Toolbar. • Options: 1 msec, 2 msec, 5 msec, 10 msec, 20 msec, 50 msec, 100 msec, 200 msec, 500 msec, 1 sec, 2 sec, 5 sec, 10 sec, 20 sec, 30 sec, 1 min, 2 min, 5 min, 10 min, 20 min, 30 min **(Reference)** “msec” is a millisecond (1/1000 second), “sec” is a second, and “min” is a minute. | | | |

## ■Adjusting the Settings data to be displayed

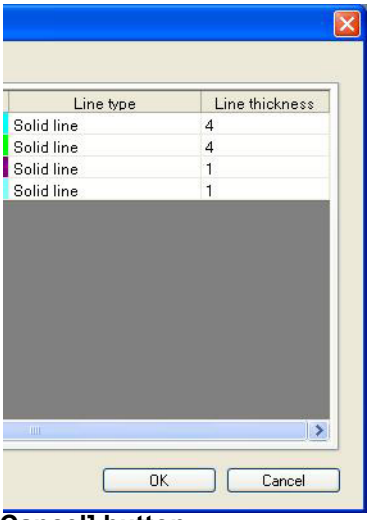
You can edit and display the Settings data to be displayed in the [Analyze] window.

From the menu, select [Analyze] - [Data Selection], and the [Display data information setting] window is opened.

Initial display




Additional editable display options include line type and thickness.




**[OK] button**
Enters the current settings, and closes the window.

**[Cancel] button**
Cancels the current settings and closes the window.

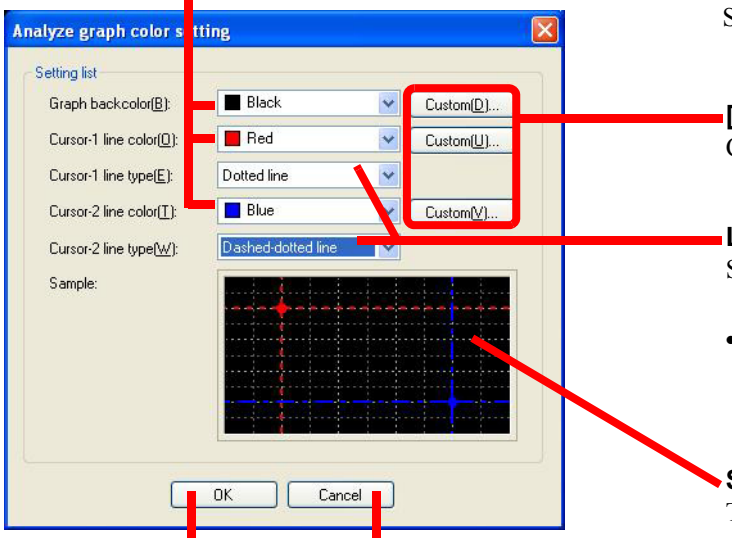
**Scroll bar**
Click the left mouse button to drag the scroll bar across for further options.

| Item name | Explanation | Editing |
|---|---|---|
| **No.** | Indicates the data number. | No |
| **Vertical Axis** | Checks the items on the vertical axis scale of the “Partial graph area” and the items shown in the “Entire graph area”. | Yes |
| **View** | Checks the items displayed in the “Partial graph area”. | Yes |
| **Data name** | Displays the data name. | No |
| **Unit** | Displays the data unit. | No |
| **Minimum** | Sets and displays the minimum data value. | Yes |
| **Maximum** | Sets and displays the maximum data value. | Yes |
| **Line color** | Sets and displays a data line color. | Yes |

| Item name | Explanation | Editing |
|---|---|---|
| **Line type** | Sets and displays a data line type.<br>• Options: Full line, dotted lines, dashed lines, short dashed lines | Yes |
| **Line thickness** | Sets and displays a channel line thickness.<br>• Options: 1 to 5 | Yes |

## ■Changing the background color, cursor color, or line type

You can change the background color and line type in “Entire graph area” and “Partial graph area”. Change the line color, line type, and line thickness.




**Color selection list**
Select a color from the list.

**[Custom] button**
Creates a color that is not listed.

**Line type list**
Select a line type from the list.

• Options: Full line, dotted lines, dashed lines, short dashed lines

**Sample**
The sample is displayed after you change a setting.

**[OK] button**
Enters the current settings, and closes the window.

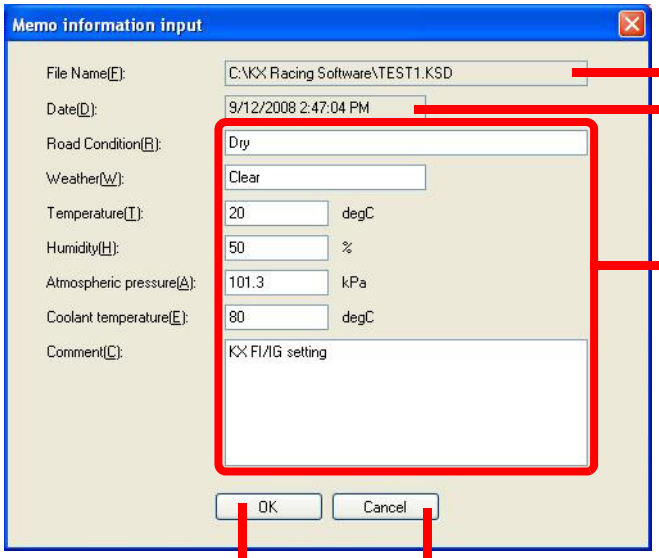
**[Cancel] button**
Cancels the current settings and closes the window.

# 9-1 Memo Information

You can add the memo information data to the existing Setting data and Logging data.

## Setting data

From the menu, select [File] - [Memo Information] - [Setting Data], and the [Memo information input] window is opened.




The current file name is displayed.

The current date and time are displayed.

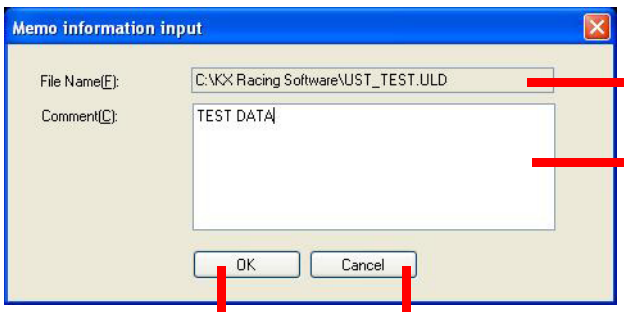
Enter the required information.

**[OK] button**
Enters the current settings, and closes the window.

**[Cancel] button**
Cancels the current settings and closes the window.

## Logging data

From the menu, select [File]-[Memo]-[Logging data], and the [Memo] window is opened. When adding a comment to a time line mark, select the Mark tab in the Information area (page 113) and then select (highlight) the mark's time box and insert the memo comment.




The current file name is displayed.

Enter the required information.

**[OK] button**
Enters the current settings, and closes the window.

**[Cancel] button**
Cancels the current settings and closes the window.

# 9-2 Analysis points

When you compare the logged data with the course layout, you can check the actual riding.

You can point out the Settings data to adjust, based on the riding quality and the actual data. Fine-tune the motorcycle setting by correcting its Settings data to improve the riding quality.

Also, you can determine how the riding style has changed and how the motorcycle performance has changed by comparing the riding data before and after fine-tuning.

When you compare the riding data of several riders, you can check how the engine performance changes by the different riding style.

Collect and/or compare various types of data so that you can get the best engine performance for you.

# 10 Terminologies

| | |
|---|---|
| **ECU** | Short for “Electronic Control Unit”. ECUs determine the quantity of fuel, ignition timing and other parameters by monitoring the engine through sensors. |
| **KDS** | “Kawasaki Diagnostic System”. A PC based diagnostic tool. |
| **OS** | Short for “Operating System”. The operating system for a PC. Example: Windows XP or Vista. |
| **Application** | The application software |
| **Driver** | The driver software |
| **PC** | Short for “Personal Computer” |
| **Logon user** | A user who has “permissions” to use a PC.<br>When the PC is started, a Logon screen first appears listing the users. A user who is listed is called the logon user. The range of users varies depending on the assigned user level. The “Administrator” user has the authority to control all functions of the PC such as installing new software. |

| Common name | Year | Model |
|---|---|---|
| KX250F | 2011 | KX250YBF |
| | 2012 | KX250YCF |
| KX450F | 2009 | KX450E9F |
| | 2010 | KX450EAF |
| | 2011 | KX450EBF |
| | 2012 | KX450FCF |

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